PROPERTY OF
GEORGE A. CLOUGH.

THE UNIVERSITY
OF ILLINOIS
LIBRARY
Q. 720.5
BU
v.19

UNIVERSITY OF
ILLINOIS LIBRARY
AT URBANA-CHAMPAIGN
BOOKSTACKS

July 15 & 22
[illegible]

THE

BUILDING NEWS

AND

ENGINEERING JOURNAL.

LIBRARY
UNIVERSITY OF ILLINOIS
URBANA

VOLUME THE NINETEENTH.

JULY TO DECEMBER, 1870.

OFFICE FOR PUBLICATION AND ADVERTISEMENTS:
31, TAVISTOCK STREET, COVENT GARDEN, LONDON.

72 B W
v. 19.

INDEX TO VOL. XIX.

ABATTOIRS competition, Manchester, 37
Abbeys: Bath, 435; Bayham, 47; Cleeve, 335; Dunfermline. 47; Eastby, 47; Jervaulx, 168; Leiston, 47; St. Alban's, 60; Wendling, 47.
Academy, the Royal, 16, 37, 78, 107, 323, 376, 403, 425, 443, 445, 474, 475, 476, 479
Accidents, 161, 178, 234, 269, 440
Accommodation for the learned societies, 362, 451
Account of St. Mary Major's, Exeter, 132
Accrington Local Board, 233
Acton Burnell Castle, 76
Adulteration of paints, 66
Advertising architects, 421
Ailanthus, the, 52
Air of London, the, 269
Aire and Calder, pollution of, 480
Albert: bridge, Chelsea, 403; Embankment, the, 305, 494; Hall, the, 269
Aldebury priory, 65
Alexandra Palace and Park, 197, 345
Alleged: oil spring in London, 178; police Vandalism, 21, 51, 52
Altar window, Hampton Lucy, 29
Altars: Roman, 139; St. Mary's, New York, 410
Amalgamation of architectural societies, 355
Amateurs, mechanical, 421
America, architects' assistants in, 302, 492
American: architects' drawings, 305; Institute of Architects, 434; railway items, 197; slates, 156; timber trade, 179; wood, 269
Ancient: abbeys, plans of, 47; cross, 114, 141, 159, 176, 214; Irish architecture, 408, 489; mines, 30; *v.* modern houses, 22; national monuments, 299; sepulchral monuments in Bangor Cathedral, 150
Ancona, Trajan's arch, 221
Animal architecture, 233
Annual exhibition at Manchester, 199
Another theatre for London, 150, 323
Antiquities: Cingalese, 400; Grecian, 106; Indian, 360, 403; preservation of, 30, 50; Roman, 19
Antwerp Cathedral, 240
Approaches to Thames Embankment, 178, 233, 341
Apse, St. Luke's, Torquay, 435
Aquarium, Brighton, 106
Arbitration: Bath, 360; Bolton, 476; Liverpool, 95, 274
Arcade, Worksop Priory, 388
Arch of Trajan, 221
Archæological:—Alnwick Castle, 300; ancient mines in the Eastern Counties, 30; ancient national monuments, 299; antiquities of Ceylon, 400; antiquities, preservation of, 30, 50; archæology in Berkshire, 266; archæology in Yorkshire, 230, 400; Bangor Cathedral, monuments in, 150; Braintree, archæology at, 102; bridge at Taunton, old, 157; brochs, 139; Carnarvon Castle, 57; Chaldon, fresco at, 285; Charles Dickens as an archæologist, 66; Colchester, monuments found at, 102; Conway Castle, 247; Conway, the walls of, 357; Cross, discovery of, 86; Dartmoor pre-historic remains, 30; East Riding tumuli, 338; Fairford windows, the, 94; fonts at Leicester, 168; fresco at Chaldon, 285; Grimsbury Castle, 266; Hereford, archæology at, 210; Herefordshire Beacon, 194; Holbury, remains at, 220; Kellythorpe tumulus, the, 285; Leicester Castle, 94; Millstones, Roman, 194; Mithric temple at Rome, 400; monumental cross, 86; national monuments, ancient, 299; Norfolk wall-painting, 338; Northumberland tumuli, 194: Norton, discovery at, 338; Oxford City wall, 175; Pictish castles, 139; Rochester Castle, 299; Roman altar, 139; Sepulchral monuments in Bangor Cathedral, 150; tesselated pavement, Roman, 30; tumuli: East Riding, 338; Hebrides, 276; Kellythorpe, 285; Northumberland, 194; Worcester Cathedral, 248
Archæological Societies:—Archæological Institution of Great Britain and Ireland, 338; Archæological Section of the Midland Institute, 102, 194, 213; Archæological Society of Durham and Northumberland, 102, 137, 230, 338; British Archæological Association, 86, 210; Cumberland and Westmoreland Archæological Society, 48; Dorset, proposed archæological society for, 240; Durham Archæological and Architectural Society, 48, 137, 213; Essex Archæological Society, 101; Huddersfield Archæological and Topographical Association, 183; Kent Archæological Society, 48, 66, 121; London and Middlesex Archæological Society, 213; North Oxfordshire Archæological Society, 194; Royal Archæological Institute, 19, 30, 85, 94, 120, 175; Royal Historical and Archæological Association of Ireland, 86; Somersetshire Archæological Society, 66, 102, 166, 357; St. Alban's Archæological Society, 48, 102; Suffolk Archæological Institute, 13, 48, 86, 138; Surrey Archæological Society, 121; Sussex Archæological Society, 48, 139, 213; Wiltshire Archæological and Natural History Society, 102, 157, 213, 220, 230; Yorkshire Archæological and Topographical Association, 183
Arches, timber and metal, 436
Architect: the domestic, 442, 459, 475; an octogenarian, 407
Architects: advertising, 421; builders and, 110, 123, 129, 159, 254, 292, 478; government and, 398; law and, 20, 33, 381, 383
Architects': assistants in America, 302, 492; drawings, American, 305; drawings, ownership of, 320, 357, 373, 381, 383, 395, 398, 419, 421, 460, 475
Architectural: art classes, 290, 323; Association, 21, 52, 69, 173, 335, 337, 345, 386, 426, 451, 461, 480; diagrams, 386; drawings by Mr. Burges, 264; Examination, 264; excursion, 52, 69, 173; Exhibition, 2, 32, 362, 375, 395; matters in Worcester, 481; Museum, 69, 304, 362; Publication Society, 39; school, Royal Academy, 376, 474; treatment of brickwork, 327
Architectural Societies:—American Institute of Architects, 434; Architectural and Archæological Society of Durham and Northumberland, 137, 230; Architectural Art Classes, 290, 323; Architectural Association, 21, 52, 69, 173, 335, 337, 345, 386, 426, 451, 461, 480; Architectural Exhibition, 2, 32, 362, 375; Architectural Publication Society, 39; Architectural Society of the Archdeaconry of Northampton, 230; Birmingham Architectural Society, 13; Durham Architectural and Archæological Society, 48; Edinburgh Architectural Association, 365, 384, 473; Exeter Diocesan Architectural Society, 203; Glasgow Architectural Society, 398; Glasgow Institute of Architects, 319, 395; Leicestershire Architectural and Archæological Society, 435; Liverpool Architectural Society, 113, 114, 131, 284, 341, 357, 473; Northamptonshire Archæological Society, 302; Northern Architectural Association, 221, 462: Northern Architectural Students' Society, 337; Oxford Architectural and Historical Society, 401, 418; Royal Architectural Museum, 69, 304, 362; Royal Institute of British Architects, 264, 318, 354, 382, 394, 398, 403, 406, 419, 425, 434, 438, 456, 460, 462, 475, 478, 489
Architecture: ancient Irish, 408, 489; animal, 233; bona-fide, 425, 475; Gothic, 386; Mediæval, 427, 451; at the Royal Academy, 78, 376, 425, 474, 475; rudiments of, 271; science in, 12, 28, 32; and the State, 355; street, 253; the useful and the structural in, 365
Ardfert Cathedral, 408
Army maps, Prussian, 216
Arrangement of hospitals, 461, 480
Art: and costume, 182, 236; classes, architectural, 290, 323; education, 120, 336; industrial, 89; monuments of, 487; Norwegian, 220; ornamental, 274, 299, 311, 336, 347, 364, 384, 408, 426, 445, 488; Ruskin on, 264, 282, 301; Swedish, 301; taste in, 363, 463; treasures in Paris, 305
Artesian well at Nebraska, 341
Artificial stone, 318
Artisans' and Labourers' Dwellings Act, 156
Artists': colours and pigments, 396; education, 336
Arts, theory of the, 3, 76, 130, 165, 218, 291, 454, 487
Ashmolean Museum, 403
Ashpits and dustbins, 309
Asphalte: paving, 58, 73, 462; roofs, 288
Assistant Surveyor of Works, 31, 34, 38, 70, 124, 163
Assize courts and townhalls (See "Building Intelligence")
Associated Arts' Institute, 336, 364, 420

BAD water, 91
Bangor Cathedral, 150
Banister rails, 107
Barnard Castle footbridge, 4
Barrow Church bells, 410
Barry's case, 236, 267, 398
Basilica of St. Clement, Rome, 291
Bath Abbey restoration, 435
Bayham and other abbeys, 47
Beauvais Cathedral, 85, 372
Bells, Barrow, 410; bells for churches, 106
Bethlehem Hospital Surveyorship, 482
Billingsgate market, 418
Birdcage-walk mansions, 236
Birmingham: Architectural Society, 13; artisans, 125
Bishop's Castle, 75; bishop's chair, a, 234
Blackfriars-bridge, 255, 305
Blackpool promenade, 403
Bolton: improvements, 125; waterworks, 40
Bombay Baths competition, 194
Bona fide architecture, 425, 475
Books, notices of (see "Publications")
Boulevard for Hull, 106
Bradford: Church Literary Institute competition, 4, 52; townhall, 35
Bramley Union competition, 168
Braintree, archæology at, 102
Brassey, the late Mr., 458
Breach of contract, 341
Breakwater at Wick, 107
Brick: architectural treatment of, 327; floors, 319: machine, improved, 240; trade of the Midland Counties, 274, 323
Brick-making: by machinery, 85, 299; in the Midland Counties, 274, 323
Brickwork, 12, 327
Bridges: Albert, 403; Blackfriars; 255, 305; Illinois and St. Louis, 305; Malton, 216; metallic, 397; Stamboul, 233; Taunton, 157; Tees, 421; Waterloo, 288
Brief chapters on British carpentry, 11
Brighton aquarium, the, 106
Bristol tramways, 418
British: Archæological Association, 86, 210; Association for the Advancement of Science, 142, 229, 246, 251, 256, 283, 305, 318; carpentry, 11; Institution, new, 382; Museum, 94, 103
Broncroft Castle, 76
Brönner's gas-lighting, 462
Bronze: discoloration of, 87; substitute for, 34
Brushes, care of, 22
Brussels Cathedral, 318
Bühlwork, 433
Builders *v.* Architects, 110, 123, 129, 159, 254, 292, 478
Builders' Benevolent Institution, 95, 337, 402
Building: Act, 264; improved and old-fashioned, 273; perplexities of, 13, 50, 68, 234, 377; societies, status of, 60; societies (see "Land and Building Societies"); on the Thames Embankment, 15, 31, 48, 60; Trades' Directory, 246; trades at Liverpool, the, 95, 274; under difficulties, 89
Building Intelligence:—

Cathedrals. — Chester, 437; Durham, 139; Ely, 31, 285; Exeter, 103; Gloucester, 31, 195, 215; Newark, 195; Oxford, 320; St. David's, 123; Wells, 231; Worcester, 248

Chapels. — Aberystwith, 158; Ashby, 122; Ashton, 13; Bacup, 213; Barnard Castle, 230; Barnstaple, 418, Batley, 474; Beaumaris, 49; Birmingham, 455; Bolton, 175, 213; Bowling, 103; Brighton, 139; Bristol, 50, 303; Burton-on-Trent, 67, 158; Chatham, 213; Churston Ferrers, 437; Clee, 122; Coatham, 122; Coventry, 213; Dalston, 31: Dawlish, 437; Doncaster, 175; Dover, 104; Dudley, 158; Everton, 214; Fenton, 175, 195; Framlingham, 123; Frome, 49; Goole, 87: Grantham, 320; Halifax, 214; Hornsea, 87; Hull, 437; Idle, 13; Ipswich, 357; Jarrow, 195; Launceston, 374; Leavesden, 285; Leek, 104; Lightcliffe, 158; Lincoln, 158; Lintz Green, 13; Liverpool, 214, 374, 492; London, 248; Ludlow, 140; Manchester, 456; March, 438; Melton Mowbray, 303; Moulton, 67; New Brighton, 418; Newtown, 158; North Ormesby, 175; Peckham, 87; Ripon, 195; Salford, 31; Sheffield, 50; Southborough, 214; Southsea, 374; St. James's, 285; Stamford Hill, 335; Stony Stratford, 339; Throckley, 358; Torquay, 418; Torrington, 320; Tyldesley, 195; Tynemouth, 339; Walthamstow, 104; Wem, 104; Windsor, 156; Yarmouth, 67

Churches.—Aberfoyle, 422; Albury, 49; Alston, 175; Amotherby, 437; Annscroft, 357; Anstey, 437; Antrim, 437; Arksey, 103; Ashfield, 357; Ashford, 13; Axminster, 372; Balsall Heath, 418; Bampton, 122; Bardsley Clinton, 285; Barnard Castle, 455; Barnstaple, 473; Barrow, 338; Barton-le-street, 194, 231; Barton-Parva, 87; Bath, 435; Bedfield, 139; Bere-Ferris, 403; Bermondsey, 87; Bethnal Green, 67; Bexley Heath, 476; Biggleswade, 455; Bisbrook, 357; Bishop's Itchington, 403; Bishopwearmouth, 67; Blackburn, 285; Blackfriars, 492; Bloxworth, 67; Bohernabreena, 139; Bolton, 103; Bosbury, 67; Bow, 374; Braemar, 87; Bridlington, 122; Bristol, 418; Britford, 303; Broad Blunsdon, 455; Buckland Newton, 49; Builth, 67; Burnford, 67; Burton Pedwardine, 67; Bury St. Edmunds, 103, 158, 357; Calverley, 122; Cambridge, 230; Canon Pyon, 338; Carlisle, 456; Castle Hedingham, 266; Castlebigh, 67; Catton, 230; Chadlington, 474; Chalk, 476; Cheddington, 111; Cheltenham, 474; Chiddingfold, 49; Chillingden, 67; Chittlehampton, 373; Church Oakley, 87; Clapton, 101, 338; Cleator Moor, 67; Clifton, 67; Coberly, 476; Cockfield, 357; Cold Waltham, 67; Coleford, 67; Coningsby 67; Conington, 31; Corwen, 403; Craigs; 266; Crowan, 403; Cumbwitch, 320; Cwmbran, 438; Dalry, 49; Deptford, 67; Dodleston, 123; Dorking, 213; Douglas, 248; Downham, 403; Dudleston Heath, 403; Dundee, 195; Dunstable, 103; Easingwold, 285; East Anstey, 372, 437; Eastbourne, 41, 213; Easton, 437; Elford, 266; Eltham, 437; Erith, 338; Everton, 248; Exeter, 32, 372; Farnworth; 31; Fewcot, 403; Fimber-on-the-Wolds, 231; Forres, 213; Frampton-on-Severn, 67; Furtho, 285; Fylingdales, 158; Gayton, 266; Glasgow, 320; Glastonbury, 213; Gorleston, 13; Govilon, 67; Great Ashfield, 103; Greywell, 403; Gunby St. Peter's 123; Gunwalloe, 67; Hackney, 67; Haggerston, 67, 191; Halifax, 123; Hargrave, 400; Haslemere, 67; Heigham, 49, 357; Higham, 357; Highbury, 158; Highclere, 338, 418; Hinton Martel, 31; Holbeach, 67; Hopton Castle, 139; Hordle, 437; Houghton Conquest, 437; Howell, 492; Huddersfield, 67; Hull, 123, 320; Hurworth, 374; Ince Blundell, 418; Ipswich, 437; Islington, 104; Iwerne Minster, 49; Jarrow, 230; Kellington, 158; Kenley, 403; Kensington, 67, 104; Kersley Moor, 31; King's Norton, 175; Knowle, 13; Landkey, 373; Leicester, 57; Leigh, 303; Leith, 31; Lewisham, 104; Leycett, 231; Lincoln, 22, 31, 67, 285, 492; Little Cowarne, 195; Little Dewchurch, 437; Little Marcle, 195; Little Yeldham, 266; Liverpool, 123, 418; Litlington, 67, 158; Llanarth, 67; Llanbadarn-fawr, 148; Llanerfyl, 195; Llanisben, 403; Llansaintfraed, 67; Llanvetherine, 418; Llanychaer, 67; Llysfaen, 357; Locking, 175; Longbridge-Hays, 158; Low Moor, 285; Lugwardine, 403; Lydeard St. Lawrence, 13; Lye, 492; Lynmouth, 403; Maidenhead, 13, 49; Marlborough, 373; Menston, 104; Middlesbrough, 13; Middleton St. Lawrence, 403; Mole Brace, 140; Mottram-in-Longdendale, 67; Munslow, 195; Mylor, 175; Nafferton, 400; Neenton, 67; New Cross, 140; New Osny, 67; Newbridge, 140; Newington, 14; Northam, 67, 87; Norwich, 456; Norwood, 104; Notting-hill, 285; Odiham, 400; Odstock, 303; Old Radford, 476; Oldham, 158; Omagh, 303; Osney, 474; Ospringe, 456; Otterton, 373; Over, 358; Overton, 158; Oxford, 67; Oxford-street, 13; Pattishall, 403; Pickering, 123; Plaistow 191; Plymouth, 373; Portland, 49; Prittlewell, 403, 456; Roath, 49; Ryhope, 140; Sarusfield, 67; Seaham Harbour, 49; Shalford, 358; Sharrow, 231; Sherrington, 303; Shrewsbury, 286, 492; Silksworth, 195; Silloth, 303; Silton, 49; Skelsmergh, 403; Smallbridge, 373; South Hackney, 67; South Kensington, 492; South Warnborough, 400; Spennymoor, 476; Starston, 339; Stepney, 67; Stoke St. Mary, 67; Stourbridge, 320; Stratford St. Andrew, 214; Streatham, 50; Stretford, 403; St. Asaph, 358; St. George's-in-the-East, 67; St. Monanco, 266; Sunderland, 123; Swanscombe, 403; Tamworth, 286; Tansley, 249; Tattenhall, 374; Thetford, 231; Thixendale, 123, 231; Thorndon, 286; Thornton, 339; Thorpe Morieux, 286, 357; Thurstonland, 286; Tisbury, 67, 303; Tolland, 403; Totnes, 373; Tunbridge Wells, 418; Turnworth, 49; Tyndall's Park, 67, 418; Uzmaston, 67; Ventnor, 231; Wakefield, 176; Walton, 358; Warminster, 49, 403; Warsash, 158; Weaverthorpe-on-the-Wolds, 231; West Derby, 13; West Kirkby, 140; West Lulworth, 303; Westhoughton, 175; Westminster, 303; Westnewtown, 67; Wettenhall, 123; White Colne, 6; Whiteparish, 303; Whittlesey, 31; Widecombe, 67, 372; Wilby, 231; Winchester, 104; Windsor, 231, 374, 438; Winkleigh, 175, 214; Wolverton, 320, 374; Worksop, 77, 474; Worle, 358; Wormingford, 104; Wotton, 286; Wyke, 67; Yafforth, 158; Youlgreave, 67

Hospitals, Infirmaries, and Asylums—Bolton, 50; Glasgow, 492; Halifax, 50; Ipswich, 123; Kidderminster, 14; Lytham, 214, 299; Marlborough, 159; Newcastle-on-Tyne, 140; Oswestry, 220; Preston, 159; St. George's-in-the-East, 68; Tamworth, 159; Wood-green, 286; Yeovil, 320

Markets and Railway Statione.—Billingsgate, 418; Dolgelley, 140; Doncaster, 249; Euston, 284; Holborn, 443; London, 125, 140, 231, 418; Mansion House, 14; Melton Mowbray, 303; Newton Abbot, 419; Nottingham, 419; Preston, 125; Rotherham, 141; Santiago, 161; Sheffield, 210; Spennymoor, 50; Staveley, 196; Whitchurch, 305

Miscellaneous Buildings.—Bakewell, 31: Banff, 400; Barnard Castle, 140, 175; Barnsley, 266; Bath, 176; Belfast, 384; Birmingham, 195; Bolton, 339; Brighton, 104; Bristol, 401; Broad Town, 159; Burcombe, 159; Bury St. Edmunds, 419; Cambridge, 419; Camden Town, 266; Cardiff, 176; Chancery-lane, 140: Chelsea, 384; Cheshunt, 50; Church Gresley, 140; Clerkenwell, 67; Clifton, 195; Crewe, 303; Dewsbury, 320; Dublin, 68; East Grinstead, 87; Edinburgh, 176; Glasgow, 492; Harrow, 440; Hinton St. Mary, 159; Islington, 234; Kensington, 303; Lambeth, 68; Leamington, 474; Lendal Bridge, 231; London, 150, 214, 286, 319, 323, 474; Loughborough, 419; Maidstone, 358; Manchester, 231, 249; Market Drayton, 196; New York, 233; Newington, 87; Nottingham, 190: Pickwell, 176; Regent-street, 39; Rotherham, 32; Savernake, 87; Sheffield, 196; Shoreditch, 231; Southampton, 374; Southport, 419; Stockport, 176; Sunderland, 68; Taunton, 286; Topsham, 419; Wells, 401; Westhoughton, 104; Winchester, 68

Schools.—Blackburn, 320; Bolton, 195; Bradford, 176; Brentwood, 303: Burton, 140; Chester, 158; Darlington, 320; Delph, 320; Dorchester, 231; Fremington, 438; Halifax, 195; Kelsale, 401, Laister Dyke, 87; Leavesden, 95; Leeds,

357806

443; Leek, 123; Longbridge Hays, 158; Manchester, 249; Matlock, 374; Merton, 31; Newcastle-on-Tyne, 31, 438; Percy Main, 50; Poole Wharfedale, 438; Rothwell, 286; Salford, 123; Scarborough, 438; Sheffield, 419; South Shields, 196; Wakefield, 176; Walsall, 286; Walton-on-the-hill, 303; West London, 141; Westerdale, 401; Weymouth, 88; Wheelock, 123; Whitechapel, 14; York, 286

Town Halls, Assize Courts, and Corn Exchanges.—Anstruther, 374; Bolton, 14; Bradford, 35; Dolgelley, 140; Doncaster, 249; Gainsborough, 158; Hungerford, 231; Larne, 231; Newington, 32; Plymouth, 31, 32; Rochester, 159, 303; Sheffield, 210; Stornoway, 141; Wareham, 401; Wednesbury, 319

Building Materials and Appliances :—American slates, 156; Appliances for Building at the Working Men's Exhibition, 109; Artificial stone, 318; banister rails, 107; Bath-stone, 32; bells for temporary churches, 106; brickmaking by machinery, 85, 299; Brönner's improvements in gas lighting, 462; cements, 114; crown glass, 184; Cunningham and Dabb's wood-carving machine, 396; damp excluder, 284; drilling machinery, portable, 96; floors, ground, 95; gas fitting, 29; glass, 184; iron, 163; ironmongery and ironwork, 29; Isle of Tyree marble, 283; kitchen range, the, 29, 114; leaky roofs, 233; lime, 494; lime burning, 85; marble, 28; masonry, 12, 28, 32; mortar, 12, 84, 494; Mount Sorrel granite, 27; nails for outdoor woodwork, 96; paving stones, 50; paving streets by steam, 142; plate-glass, 184; prairie timber, 440; quick-drying inodorous paint, 318; sash-lines, steel ribbon, 305; sawing stone, 228; sheet-glass, 184; silica, 318; slate and its uses, 209; stone, waterproofing, 440; Victoria stone, 14, 32, 50; wire tramways, 107

Building News "Sketchbook:'—Ancient cross, 114, 141, 159; door, St. Augustine's Church, Hedon, 221; door hinge, Grammar School, Norwich, 487; doorway, St. Alban's Abbey, 60; examples of half-timbered churches, 294; fonts, Leicester, 168; old house at Thorpe, 132; priory, Old Malton, 168; Stydd chapel, Ribchester, 487; tombstones, Nunnery, Iona, 451; tower gateway, Leigh's Priory, Essex, 48; Worksop Priory Church, 388

Buildings: for the Exhibition, 4; heated by hot water, 399; in the isle of Thanet, 164, 181, 200, 214, 217, 249

Burges, drawings by Mr., 264

Burlington Fine Arts' Club, the, 57

Burning lime, 85

Buttress design, 441

Buxton improvements, 52

CABINETS: oak, 132; painted, 354, 376

Caissons, large, 78, 409

Calculation of earthwork tables, 245, 319

Calder, pollution of, 480

Canadian wooden railroad, a, 341

Canals: Cape Cod, proposed, 16; Great Western, 197

Care of brushes, 22

Cardiff: Castle tower, 428; schools of art, 440

Carnavon Castle, 57

Carpenters of Windsor, the, 197

Carpentry, British, 11

Carriage-painters, 168; carriage-way through St. James's Park, 49

Carving machine, wood, 396

Carvings, Gothic, 348

Case of Mr. Barry, 236, 267, 398

Castelbarco, tomb of, 65, 88, 105

Casting metals, 70

Castles: Acton Burnell, 76; Bishop's, 75; Broncroft, 76; Cardiff, 428; Carnarvon, 57; Clun, 75; Conway, 247; Grimsbury, 266; Herefordshire, 145; Hopton, 75; Leicester, 94; Ludlow, 75; Pictish, 139; Red, 76; Rochester, 299; Shropshire, 75; Stokesay, 76; Wattlesborough, 75; Whittington, 75

Cates, works by Mr., 253

Cathedrals: Antwerp, 240; Ardfert, 408; Bangor, 150; Beauvais, 85, 372; Brussels, 318; Chester, 437; Ely, 31; English, 396; Gloucester, 31; Hereford, 108, 168; Rheims, 194; Strasburg, 194, 258, 283, 311; St. Paul's, 22, 48, 109, 127, 359, 360; Wells, 168, 394; Worcester, 248

Ceilings, 375, 460

Cellars, ventilation of, 138

Cement: for floors, 319; glycerine, 87

Cements, 114

Cemeteries: metropolitan, 39; Parisian, 52

Central refreshment rooms, South Kensington, 55

Centre group in reredos, Plaistow, 209

Certifying for "extras," 15, 68

Chair, a bishop's, 234

Chairman of the Board of Works, 403

Chaldon fresco, the, 285

Chancel, St. Luke's, Torquay, 435

Chapel at Stydd, 487

Chapters on British carpentry, 11

Characteristics of English cathedrals, 396

Charge against a surveyor, 421

Charlemagne's tomb, 489

Charles Dickens as an archæologist, 66

Cheap railways, 106

Cheapside asphalte paving, 58

Chester cathedral, 437

Chimneys, smoky, 12

Christ Church, Clapton, 101

Church: bells, 106, 410; building in Devon, 372; building in fifty years, 421; plate competition, 395; struck by lightning, a, 86

Churches: Cheddington, 111; Clapton, 101; Eastbourne, 41; Exeter, 132; Haggerstone, 191; half-timbered, 294, Hedon, 221; Isleham, 48; Lincoln, 477; Liverpool, 464; Llanbadarnfawr, 148; Plaistow, 191, 209, 388; Stamford-hill, 335; town, 203, 214, 238; White Colne, 6

Cingalese aniiquities, 400

Cisterns, water, 451

City: companies' halls, 253; hall, San Francisco, 233; hoardings, 70

City of London: mortuary, 246, 323; Union Offices competition, 319, 462

Civil Engineering :—American railways, 197; arch construction, 436; artesian well at Nebraska, 341; Bolton new waterworks, 40; breakwater at Wick, 107; brickmaking machinery, 85; bridge, Illinois and St. Louis, 305; bridge, Malton, 216; bridges, metallic, 397; bridge, Stamboul, submarine, 233; bridge, Lees, 421; caissons, large, 78, 409; Canadian wooden railroad, a, 341; canal, Cape Cod, proposed, 16; canal, Great Western, 197; casting metal, 70; cheap railways, 106; civil engineering at the time of Christ, 84; Civil and Mechanical Engineers' Society, 15; Cleveland Institute of Engineers, 341, 366; cofferdams, 397; colliery shaft at Shildon, 437; Dingwall and Skye Railway, 107; dolphins, 40; Douglas landing pier, 52; Dover Harbour, 106, 178; drilling machinery, 96; Dudley Mining Institute, 246; Dundee Harbour, 472, 479; education of civil engineers, 415; engineer, the, 406; Engineers', Iron, and Metal Trades' Directory, 409; Euston-square terminus, 284; excavation and embankment tables, 245, 319; expensive shaft, an, 246, 286; Gothic engineering works, 337; graving dock at Greenwich, 160; gravel-walks, 58; Great Western Railway, 197; improvement of the Thames navigation, 197; Institute of Mining Engineers, 125; Institution of Civil Engineers, 41, 305, 320, 323, 399, 436, 446; Institution of Mechanical Engineers, 125; Institution of Mechanical and Mining Engineers, 143; lathe for turning banister rails, 107; Liverpool railway works, 269; Manchester Institute of Engineers, 85; mechanieal amateurs, 421; Mersey tunnel, the, 494; metal arches, 436; metallic bridges, 397; Metropolitan District Railway, 201; Midland Institute of Mining Engineers, 125; Mont Cenis Tunnel, the, 488; National Engineers' Association, 41; North of England Institute of Mechanical and Mining Engineers, 143; Paisley water supply, 399; Severn locks and weirs, 107; sewers in running sand, 256; shafts at Shildon Colliery, 437; Society of Engineers, 34, 216, 476; status of civil engineers, 415; steep railway, a, 58; strains in rafters, 415; tables for railway excavations, 245, 319; Thames Embankment, 200, 397; timber and metal arches, 436; Torquay Harbour, 160; wire tramways, 107; wrought-iron cranes, 55, 74, 128

Clark's water-softening process, 437

Classes, architectural art, 290, 323

Clauses of contracts, headings for, 318

Cleansing the streets, 106

Cleeve Abbey, 335

Cleveland Institute of Engineers, 341, 366

Clitheroe workhouse competition, 60

Clocks: Beauvais Cathedral, 372; Strasburg Cathedral, 311

Clubs: Corinthan, 39; Burlington Fine Arts, 57

Clun Castle, 75

Cofferdams for Thames Embankment, 397

College, Indian Engineering, 122, 234

Colonial offices, 30

Colosseum, the, 438

Colour: in architectural diagrams, 386; use and abuse of, 5, 14, 41, 59

Colours and pigments, artists', 396

Compass, the prismatic, 167

Compensation cases, 215, 457

Competition drawings, Kensington, 1, 51

Competitions, architects and, 478

Competitions :—Bombay Baths, 194; Boys' School for the Commissioners of the Patrotic Fund, 357; Bradford Church Literary Institute, 4, 52; Bramley Union, 168; Camberwell Charity Estate, 14, 141; church plate, 395; City of London Union's Offices, 319, 462; Clitheroe Workhouse, 60; "Criterion," the, 419; Epsom Burial Board, 168; Fans, 285; Farnworth Local Board's Offices, 294; Gateshead Congregational Church and Schools, 457; Guisbrough Cemetery, 14; Halifax Building Society, 141; Limited competitions of 1870, 357; Leeds Workhouse Infirmary, 213; London Corn Exchange, 17, 20, 69; Manchester Abattoirs, 37; Margate Jetty, 60; Matlock Church, 265; Memorial Fountain, Glasgow, 375, 395, 438; Memorial to Marquis of Westminster, 329; Metropolitan Railway Company's surplus lands, 150; Newark Church 105; Newport Schools, 462; Nottingham Wesleyan Chapel, 32; Swansea Guildhall, 60; Thorngate Footbridge, Barnard Castle, 4; Wednesbury Town-hall, 319, 329; Whitchurch Market-hall, 305; Winchester Town-hall, 194; Wirksworth Town-hall, 265; Yeovil Dispensary, 320, 358, 479

Competitive examination, 146, 163

Completion of St. Paul's, 22, 48, 127, 360

Confusion in the streets, 240

Congregational Church, Stamford-hill, 335

Consecration refused, 13

Construction: arches, 436; ceilings, 375, 460; dolphins, 40; gravel-walks, 58; sewers in running sand, 256

Consumption of wood in America, 269

Contamination of water by sewage, 398

Contracts, 221; contracts: breach of, 341; clauses of, 318; lump, 344, 380, 419, 438

Conway: Castle, 247; walls of, 357

Corinthian Club, the, 39

Corn Exchange competition, 17, 20, 69; Corn Exchange, Sheffield, 210

Correspondence :—

Academy, Royal, 376, 474, 475; Air and health question, the, 401, 419, 438, 456, 475, 492; Albert Hall, the, 33; Aldgate crypt, the, 50; Alleged police vandalism, 51, 52; American architectural draughtsmen, 492; American railway travelling, 267; Ancient cross, 141, 159, 176, 214; Architects and builders, 123, 159; Architects' charges, 32, 176, 196, 456; Architects' drawings and plans, 419, 475; Architects' pupils, 68, 141, 159; Architectural Association excursion, 69; Architectural custom, 196; Architectural Exhibition, 32, 375; Architectural Museum, 304; Architectural School, Royal Academy, 376, 474; Architecture and Freemasonry, 339; Assistant Surveyorship, Office of Works, 124

Barry's case, Mr., 267; Bath stone, 32; Bazalgette (Mr.) and his son, 33; Bonafide architecture, 475; Bonus, a, 286; Builders drawing plans, 51, 68, 88, 105, 123, 159; Builders' clerks, sharp, 475; Builders' contracts, 104; Building perplexities, 50, 68; Building societies, 249; Building stone, 32; Buildings in the Isle of Thanet, 214, 249

Camberwell Charity Estate Competition, 14, 141; Ceilings, 375; Certifying for "extras," 68; Cheap schools, 475; Choice morceau, a, 457; Circularising architects, 494; Cleaning windows, 176; Competition drawings, South Kensington, 51; Competitions, 14, 32, 51, 69, 105, 141, 250, 358, 375, 419; Concrete building, 321, 340; Contracts, 104, 419, 438; Corn Exchange Competition, 69; Covent Garden Market, 250, 266; "Criterion," the, 419; Custom of Glasgow architects, 419, 438

Decoration and imitations, 14; Decorations at Kensington Museum, 105; Dome of St. Peter's, 50

Ealing sewage works, 439; Edinburgh, 231; Enamelled slate, 321; Expensive shaft, an, 286; "Extras," 68

Fountain, Glasgow, 375, 395, 438; Freemasonry and Architecture, 339

Glasgow architects, 419, 438; Great expectations, 321; Ground story, which is the, 141, 176, 184; Guglielmo de Castelbarco, 88, 105; Guisbrough Cemetery competition, 14

Halifax Building Society's competition, 141; Hall of Arts and Sciences, 33.

Inducements for competition, 32; Institute of Architects, the, 419, 438, 456

Lay and cleric memorials in Edinburgh, 231; Llantwit Church, cross at, 141, 159, 176, 214; London Wesleyan chapels, 124; Ludgate-hill, 376; Lump contracts, 419, 438; Lytham cottage hospital, 321, 358, 375

Newark church competition, 105; Notes from Glasgow, 232; Nottingham Wesleyan chapel competition, 32.

Overcrowded state of the profession, 250, 267, 304, 321

Painted cabinet, 376; Paving-stones, 50; Percentagers and architects, 492; Postage of tracings, 141; Preservation of antiquities, 50; Prices of timber at sales, 68; Purification of sewage, 439

Quantity-surveyors, 339, 375

Refreshment Rooms, South Kensington, 105; Restorations, 456; Royal Academy, 376, 474, 475; Royal Institute of British Architects, 419, 438, 456

Sales of timber, 68; Sentiment in building, 231; Sewage works, 267, 439; Sharp builders' clerks, 475; Sharp practice, 88; Shrewsbury Market buildings, 68; Something wrong with the Institute, 419; Status of architects, 456; Surveyor, a, in 1678, 375

Technical education, 339; Tendering with a vengeance, 32, 286; Town churches, 214.

United States patent law, 249.

Ventilation, 401, 419, 438, 457, 475, 492; Verona, tomb at, 88, 105; Victoria stone, 14, 50, 68

Wesleyan chapels in London, 124; Winkleigh parish church, 214

Yeovil Dispensary competition, 358

Corporate generosity, 403

Corporation of London's surplus land, 106, 220

Cost of church-building in fifty years, 421

Costume and art, 182, 236

Cottage hospitals: Lytham, 299, 321, 358, 375; Oswestry, 220

Courts of law, the new, 13, 52, 94, 102, 107, 341, 403, 421

Coutts, Miss Burdett, and London improvements, 343

Covent Garden Market, 217, 250, 267

Cranes, wrought-iron, 55, 74, 128

Crenellated mansions in Shropshire, 75

Cross, ancient, 114, 141, 159, 176, 214; cross, discovery of, 86

Crowhurst-place, roof at, 11

Crown glass, 184

Crystal Palace, Egyptian Court, 288, 289

Cumberland and Westmoreland Archæological Society, 48

Cunningham and Dabb's wood-carving machine, 396

Curves, laying out, 227, 385

DAMAGING public structures, 288

Damp: dwellings, 347; excluder, 284

Danger of elm trees in dry weather, 58

Darlington Exhibition, the, 15

Dartmoor, remains at, 30

Deaths (see "Obituary).

Decoration and imitations, 14; decorations of St. Paul's Cathedral, 22, 48, 127 (for decoration see also "Furniture and Decoration.")

Decorations at the South Kensington Museum, 55, 73, 93, 127

Decorative processes, 317, 353, 393, 433, 469

Defect in the Smoke Nuisance Act, 269

Defective house-planning, 161

Demolitions in the Strand, 403

Denton Church, 294

Depression in the slate trade, 234

Derby Industrial Exhibition, 341

Derbyshire pottery and porcelain, 183

Description of cofferdams, 397

Design of buttresses, the, 441

Desirable modifications of sanitary law, 247

Details of arch construction, 436

Detection of adulteration in paints, 66

Development of: mediæval architecture, 427, 451; ornamental art, 274, 299, 311, 336, 347, 364, 384, 408, 426, 445, 488

Devonshire church building, 372

Diagrams, architectural, 386

Diary of Architectural Association's excursion, 173

Dickens as an archæologist, 66

Different systems of floors, 319

Dingwall and Skye Railway, the, 107

Dinners: Builders' Benevolent Institution, 337; workmen's, 16, 52, 89, 197, 233

Directories: Building Trades', 246; Engineers' and Metal Trades,' 409

Discoloration of bronze, 87

Discoveries: ancient mines, 30; foundation stone, Blackfriars-bridge, 255; fresco-painting, 285; monumental cross, 86; Roman pavements, 30; Roman wall-paintings, 29; wall-painting in Norfolk, 338

Diseases, endemic, 437

Distemper, 263

Distribution: prizes, Royal Academy, 443; water in cisterns, 451

District Surveyorships' Examination, 403

Dock at Greenwich, graving, 160

Dolphins, 40

Dome of St. Peter's, the, 6, 50

Domestic: architect, the, 442, 459, 475; hygiene, 29, 114

Door, Hedon Church, 221; door-hinge, Grammar School, Norwich, 487

Doorway, St. Alban's Abbey, 60

Douglas Pier, 52

Dover Harbour, 106, 178

Drains, 12

Drawing-board, triangular. 403

Drawings: American architects', 305; architects' 320, 357, 373, 381, 383, 395, 398, 419, 421, 460, 475; by Mr. Burges, 264; National Competition, 1, 51

Drilling machinery, portable, 96

Drying wood, 409

Dudley Gallery Exhibition, 329; Dudley Mining Institute, 246

Dulwich College, 305

Dundee Harbour, 479

Dunfermline Abbey, 47

Dunstable Priory Church, 366

Durham Archæological and Architectural Society, 48, 102, 213

Dust of streets, 305

Dustpits and ashbins, 309

Dusty thoroughfares, 246

Dwellings: damp, 347; for the industrious classes, 15, 34, 69, 124, 156, 337, 409, 490

EARLY Gothic stone carvings, 348

Earth, transportation of, 148

Earthquake at Manilla, 239

East End improvements, 416; East London: Museum, 458; water supply, 86

Eastbourne, St. Saviour's Church, 41

Eastby Abbey, 47

Ebdy *v.* McGowan, 20, 33, 357, 373, 381, 383, 395, 421, 460

Edinburgh: Architectural Association, 365, 384, 473; tramways, 216

Education: art, 120, 336; Board for London, 276, 410; Civil Engineers, 415; technical, 307, 339, 458

Egypt at Sydenham, 288, 289

Election of pensioners, Builders' Benevolent Institution, 402

Elements of handrailing, 185, 204, 222, 258, 276, 287, 294, 322, 329, 348, 366, 388, 410, 428, 446, 464, 482

Ellesmere college hospital, 220

Elm trees in dry weather, 58

Elveden Hall, 435

Ely Cathedral, 31

Embankments: railway, 245, 319; Thames, the, 15, 31, 48, 49, 51, 60, 112, 178, 200, 233, 251, 305, 341, 397, 494

Emigration to Texas, 284

Endemic diseases, 437

Engineer, the 406

Engineering: Civil, at the time of Christ, 84; College, Indian, 122, 234; Indian, 455; railroad, 245, 319; works, Gothic, 337

Engineers', Iron, and Metal Trades' Directory, 409

English Cathedrals, 396

Epsom Burial Board competition, 168
Escapes, fire, 89
Essebourne priory, 65
Essex Archæological Society, 101
Eton College chapel, organ at, 143
Etruscan ornament, 470
Euston-square terminus, 284
Examinations: competitive, 146, 163; district surveyorships', 403; science, 112; Voluntary, 264
Examples of half-timbered churches, 294
Excavation and embankment tables, 245, 319
Exeter: Diocesan Architectural Society, 203; St. Mary Major's, 132
Exhibitions: Architectural, 2, 32, 362, 375; Darlington, 15; Derby Industrial, 341; Dudley Gallery, 329; International, 4, 21, 143, 288, 360, 471; Manchester, 199; Old Masters, 323, 445, 479; paintings, Norwich, 341; Raphael & Michael Angelo, the, 57; Society of Painters in Water-colours, 424; Water-colour paintings, 361; Working Men's, 85, 91, 109, 193; workmen's, 111, 193
Expensive shaft, an, 246, 286
Experiments on the strength of floors, 319
Expression in buttress design, 441
Extinguishing fire, 283
"Extras," 15, 68, 89

FAILURES: competitive examination, 146, 163; pillars at St. Swithin's, Lincoln, 22; workmen's exhibitions, 111
Fairford windows, the, 94
Fall of buildings at Manchester and Jarrow, 178
Fan competition, 285
Farnworth Local Board Offices competition, 294
Fatal accidents, 161, 234, 269
Fees for hoardings in the City, 70
Fenestration, 325
Fifty years of church building, 421
Fine Art Exhibition, Derby, 341; Fine Arts Club, the Burlington, 57
Fire: escapes, 89; extinguishing appliances, 283
Fireproof structures, 181
Fleet sewer, the, 304
Floors: brick and cement, 319; ground, 95; strength of, 319
Fonts: Leicester, 168; Llandewednack Church, 335
Footbridge, Thorngate, 4
Forest trees, 138, 150
Foundation stones: Blackfriars-bridge, 255; robbing, 341
Foundations, 12; foundations, unhealthy, 409
Free Library, Salford, 444
French suburban villas, 113, 131
Fresco-painting, 454; fresco-painting at Chaldon Church, 285
Frescoes by Mr. Herbert, 421
Friendly Operative Carpenters' and Joiners' Society, 470
Front of Wells Cathedral, 168, 394
Frost and asphalte, 462
Fruit market, Sheffield, 210
Furniture, window, 312
Furniture and Decoration:—Adulteration of paints, 66; Apse, St. Luke's, Torquay, 435; Bühlwork, 433; Colour, use and abuse of, 5. 14, 41, 59; Decorative processes, 317, 353, 393, 433, 469; Distemper, 263; Elveden Hall, Suffolk, 435; Fresco-painting, 454; House decoration, 5, 14, 41, 59, 83, 101, 119, 137, 155, 173, 191, 263, 281, 317, 353, 393, 433, 469; Indian decorations, 435; Injection for painting, 233; Kensington Museum, 55, 73, 93, 105, 127; Lead poisoning, 142; Ornamental decoration, 5, 14, 41, 59. 83; Preparatory processes, 101, 119, 137, 155, 173, 191; Quick-drying inodorous paint, 318; Reisner work, 433; Removing paint from wood, 281; Siliceous painting, 472; Stencilling, 317, 353, 393; St. Paul's Cathedral 22, 48, 127; University College, decorations at, 288; Utility of Decoration, 83.

GALLERIES: Grosvenor, 107; National, 86, 94
Gallowhill Mansion, 276
Gardens, the Surrey, 125
Gasfitting, 29
Gas: London, 48, 299; purification, 221, 341
Gaslighting, improvements in, 462
Gateways: Cleeve Abbey, 335; Leigh's Priory, 148
General headings for clauses of contracts, 318
General Post-office, the, 310; General Post-office, the new, 474
Geological systems and endemic diseases, 437
Gilbert Scott, illness of Mr., 377, 440
Glasgow: Architectural Society, 398; Institute of Architects, 319, 395; new railway in, 453; notes from, 209, 232, 293, 453, 490; workmen's dwellings, 490.
Glass, 184
Gloucester: Cathedral, 31; Roman pavement at, 70
Glycerine cement, 87
God help the poor! 39
Good water, 91
Gossip from Glasgow, 293, 453
Gothic: architecture, 386; engineering works, 337; stone carving, 348
Government and architects, 398
Grand prize of Rome, the, 196
Gravel walks, 58
Graveyards, London, 34, 39
Graving-dock at Greenwich, 160
Great: caisson, a, 78; clock at Strasburg, the, 311; Western Canal, 197; Western Railway, 197
Grecian antiquities, destruction of, 106
Greek ornament, 470
Greengate Free Library, 444
Greenwich, graving dock at, 160
Grimsbury Castle, 266
Grosvenor Gallery, the, 107
Ground-floors, 95; ground-story, the, 284
Group in reredos, Plaistow, 209
Growth of timber, 440
Guglielmo da Castelbarco, tomb of, 65, 88, 105

HACKNEY, open spaces at, 494
Haggerston, St. Chad's Church, 191
Half-timbered churches, 294
Hall-roof at Crowhurst Place, 11
Halls of the City companies, 253
Hampton Lucy, window at, 29
Hampstead: the heath, 233; land at, 160
Handrailing, elements of, 185, 204, 222, 258, 276, 287, 294, 322, 329, 348, 366, 388, 410, 428, 446, 464, 482
Harbours: Dover, 106, 178; Dundee, 478; Torquay, 160
Hardham Priory, 65
Harrow Public Hall, 440
Headings for clauses of contracts, 318
Health and sewage irrigation, 52
Heating by hot water, 399
Heavy surcharge on a local board, 233
Hebrides, tumuli in the, 276
Hedon Church, doorway at, 221
Herbert's frescoe, 421
Hereford: archæology at, 210; Cathedral illuminated, 168
Herefordshire castles, 145
Hinges, mediæval, 444, 487
History of Gothic architecture, 386
Historical development of ornamental art, 274, 299, 311, 336, 347, 364, 384, 408, 426, 445, 488
Hoardings in the City, 70
Holborn Viaduct, the, 34; Holborn Viaduct station, 443
Holbury, remains at, 220
Holland, technical instruction in, 145
Home and Colonial Offices, 30
Honours refused, 16
Hopton Castle, 75
Hospital: arrangement, 461, 480; fire-extinguishing appliances, 283
Hospitals: Lytham, 299, 321, 358, 375; Oswestry, 220; St. Thomas's, 4; ventilation of, 30, 461, 480 (for hospitals see also "Building Intelligence.")
Hot water, heating by, 399
Hotel, a monster, 233; Hotel de Ville, Rouen, 312
House-building, 273; House of Commons refreshment-rooms, 31, 60; House of Commons, ladies' gallery, 48; house decoration, 5, 14, 41, 59, 83, 101, 119, 137, 155, 173, 191, 263, 281, 317, 353, 393, 433; house-painters' soirée, Liverpool, 161; house-planning, defective, 161; house for the scientific societies, 362, 451; house at Thorpe, 132
Household cisterns, 451
Houses: ancient and modern, 22; ground floors for, 95
How shall sewage be treated? 201; how to write a specification, 56
Hull, boulevard for, 106
Hyde Park, 49
Hygiene, domestic, 29, 114

ILLINOIS and St. Louis bridge, 305
Illness of Mr. Gilbert Scott, 377, 440
Illumination of Hereford Cathedral, 163
Imitations and decorations, 14
Improved: brick machine, 240; house building, 273; Industrial Dwellings Company, 69, 124, 409; workmen's dwellings, 15, 34, 69, 124, 156, 337, 409
Improvement: Kensington-road, 167; of London, 343; in the Thames navigation, 197; at Wapping, proposed, 305
Improvements: Bolton, 125; Buxton, 52; East End, 416; in gas-lighting, 462; Hull, 106; Marylebone, 374; Shoreditch, 323; South London, 143, 403
India: engineering in, 455; at South Kensington, 405
Indian: antiquities, 360, 403; Engineering College, 122, 234
Industrial: Exhibition, Derby, 341; art in Wolverhampton, 89; Schools, Leavesden, 95
Industry and Science, 275
Inflammability of rotten wood-dust, 66
Injection for painting, 233
Inodorous paint, quick-drying, 318
Institutes: Architects (American), 434; Associated Arts, 336, 364, 420; British Architects, 264, 318, 354, 382, 394, 398, 403, 406, 419, 425, 434, 438, 456, 460, 462, 475, 478, 489; Mechanical and Mining Engineers, 143; Midland, 102, 194; Mining Engineers, 125; Painters in Water-colours, 361
Institutions: Builders' Benevolent, 95, 337, 402; Civil Engineers (see "Civil Engineering"); Mechanical Engineers, 125; New British, 382; Surveyors (see "Surveyor.")
Instruction, technical, 125, 145
Intercommunication:—
ACADEMY, Royal, 358; agreement stamps, 420; air for chapels, 376; ants, 160; antiquity of pulpits, 439, 457; architects in America, 33, 51; architects' assistants' holidays, 159, 177; architects' charges, 14, 32, 215; architects' pupils, 420, 440, 457; Architectural Association, the, 232, 287; architectural perspective, 69, 88; areas of circles, 215, 232, 250; arrangement of stairs, 15; ash timber, 232, 251; asphalting, 159, 196
BALL rooms, 14, 33; Bath-brick, 287, 304; base lines, 215, 250; beams, 33, 51; bills of "extras and deductions," 457; binding the BUILDING NEWS, 457, 476; black japan, 232; blackening brass, 358; blue bricks, 267; books on harbours, 51, 88; brazing band-saws, 232, 251, 287: breach of contract, 196, 232; building schools, 420; building societies, 322; building walls, 196, 215, 232
CALCULATING earthwork, 105, 124; calculation of logarithms, 232, 251; cantilevers, 215, 232, 250; canvas for oil painting, 232; carrying a stream over a railway, 160, 196; cast iron, 232, 268; cast-iron tanks, 215, 250; cemetery chapels, 376, 420; chancel wall and arch, 401; chimney shafts, 322; church building, 401; clerks of works, 439, 457, 475; cold bath, 88, 322; colouring size, 250; colouring tiles, 14; columns, 33, 51; concrete building, 402, 420; concrete paving, 358, 376; Coney's work, 250; convents, 14; copying scroll work, 494; cottage hospital, 196, 232; cottage plans, 322, 340; Continental architecture, 250; cubing-up, 250; custom and usage, 457; cymagraph, the, 457
DAMP walls, 304, 322, 323, 340; decimal value, 475; designs for headstones and slabs, 402; diameter of shaft, 420; diameter of sphere, 250, 268, 287; docks and harbours, 215, 250; drawings, 401; driving piles, 160, 197; dry foundations, 322, 340, 359; drying wood, 439; dust in mortar, 69, 88.
EARTHWORK, 105, 124; eidograph, 340; elements of handrailing, 287, 322; elliptical scroll, 304, 340, 359; employers and clerks of works, 439, 457; evaporation, 142, 176; "extras and deductions," 457
FACTORY chimneys, 141, 160, 401; fences, 494; fine buff-tinted bricks, 376, 402; fire-proof floors, 215, 250, 267; floors, 142, 176, 177, 340; fonts, 476
GATESHEAD competition, a, 457; geometrical problem, 105; girders, 14, 33, 51, 88; glass drawing-board, 14; Gothic architecture, 176; graining, 475; grinding money, 215
HANDRAILING, 287, 323: hanging sashes, 457; harbours and docks, 215, 250; heated chamber, 250; hot or cold bath, 88, 322; hydraulic lifts, 322; hydrostatics, 106, 160
INCLINED beams, 322, 359; india-rubber pushers or knobs, 376; International Exhibition, 287, 304; Irish county surveyorships, 232, 287
JACK arches, 232; joiner's work, 420
KENTISH ragstone, 232, 287
LAYING-OUT curves, 215, 232; lead roofing, 33, 51; Leicestershire fonts, 476; liability, 106, 160; liability of surveyors, 304, 340; lightning-conductors, 340, 359, 376, 402, 420, 439, 457; lime-kilns, 250; load on iron columns, 159, 196; lodge and villa architecture, 409, 420
MAKING roads, 176, 215; malt-house floor, 176, 215; malting-kilns, 250, 287; measuring builder's work, 76, 215; measuring hilly ground, 176, 215; measuring tracery, 304, 322; measurement of mouldings, 420; meters, 250; modelling, 160; modelling wax, 322; mortar, 69, 88; mounting tracings, 322, 340, 359, 376, 402, 420
NEO-GREC, 340, 359, 376
OPTICAL square, 232, 287; origin of pulpits, 439, 457; ornamental inlay, 196, 215; ornamental scrollwork, 494
PAINTING, 475; partnerships, 420; percentage or decimal value, 475; permanent wash for outside stucco, 33; perspective, 69, 88; pile-driving, 160, 197; pine floors, 358, 376; pitch pine, 304, 323; plan arrangement of stairs, 15; plans of convents, 14; plans of cottages, 322, 340; Plasterers' Company's prizes, 159; plastering, 142; polishing pebbles, 14; polishing plaster of Paris, 250; Poplar, 232; Portland cement, 88, 106; Post-office clerks, 232, 267; practical clerks of works, 475; preparing canvas, 232; price of concrete, 304; price in cubing-up, 250; price for sawing timber, 232; prizes of the Plasterers' Company, 159; professional charges, 14; profile of mouldings, 159, 287, 322; Pugin church seat, the, 322; pull upon tie-rods, 322, 340, 402
QUANTITIES, 340, 402, 420, 457; quantity-surveyors, 304
RAFTERS, 401; raising water, 51; rateable buildings, 439; reclamation banks, 51, 88; red bronzing, 250, 287; removing ink-stains, 401, 420, 457; removing Indian ink, 287; removing whitewash, 196, 232; retaining wall, 141, 176; road-making, 176, 215; roofs, 401, 420, 439, 440; Royal Academy, 358
SAWING, timber, 232; scaffolding for spire, 401; scagliola, 358, 420; scholarships, 322; school building, 420; schools of art, 304; scrolls, 340; scrollwork on tombstones, 494; self-working gradient, 142, 176; seventeenth and eighteenth century architecture, 457; sewage irrigation, 159, 177; shrinkage of castings, 105, 142; sketching in Tower of London, 176, 197; slate cisterns, 232; small hospital, 322; smoky chimney, 159, 177; softening ash timber, 232, 251; stains on wood, 250; stair arrangement, 15; stamps on agreements, 420; Stettin white wood, 51; stone dust in mortar, 69, 88; straw barn, 215, 232; straw and water-glass houses, 250, 268; strength of cantilevers, 215, 232, 250; strength of girders, 14, 51; strength of timber, 159, 177; strengthening floor, 340; supply of water, 322, 340; surveying, 287, 304; surveyor of taxes, 88, 106; surveyors' charges, 340; surveyors' licences, 358; suspension claims, 359; system of quantities, 340, 402, 420, 457
TAKING out coloured lines, 232, 251; taking out quantities, 402, 420, 457; tenants' fixtures, 494; testing cast-iron, 160, 197; testing Portland cement, 88, 106; tie rods, 322, 340, 402; Turkish baths, 196, 215, 232
USAGE and custom, 457
VARNISH, 420; Venetian blinds, 267; villa architecturs. 401, 420; Voluntary Examination, 14, 267; Vulcanite mouldings, 287
WALL building, 196, 215, 232; wall-paper, 250, 268; walls, 475; walnut timber, 475; Warren girder, 51, 88; wash for outside stucco, 33, 124; waterproof roofs, 439, 476; water supply, 322, 340; waterworks, 250, 268; wax modelling, 322; weight of rails, 105, 142; white French polish, 340; Whitworth Scholarships, 176, 215; wood stains, 250; work on building societies, 322
YELLOW light, 14; Yorkshire fonts, 476
ZINC for ceilings, 420
International Exhibition, the, 4, 21, 143, 288, 360, 471; International Exhibition, Workmen's, 91, 109, 193
Iona, tombstones at, 451
Irish architecture, ancient, 408, 489
Iron, 163; iron cranes, wrought, 55, 74, 128; iron from the sea shore, 462
Ironmongery and ironwork, 29
Ironwork, Mediæval, 444
Irrigation, sewage, 52
Isle of Man public works, 52; Isle of Thanet, buildings in, 164, 181, 200, 214, 217, 249
Isleham parish church and priory chapel, 48
Islington workhouse, the new, 13, 234, 377
Italy at Kensington, 325, 379, 423

JARROW, accident at, 178
Jersualem water supply, 34
Jervaulx Abbey, 168
Jetty, Margate, 60
Jewellery, Spanish, 310
Journeys, railway, 235

KEEPER'S lodge at Kirtlington Park, 6
Kellythorpe tumulus, the, 285
Kensington Museum, 55, 73, 93, 105, 111, 127, 178, 291, 308, 310, 325, 328, 379, 405, 423; Kensington-road "improvement," 167; Kensington School of Design, 470
Kent Archæological Society, 48, 66, 121
King's Cross, workmen's dwellings at, 15
Kirtlington Park, lodge at, 6
Kitchen range, 29, 114

LABOURERS' Dwellings Act, 156
Ladies' gallery, House of Commons, 48
Land at Hampstead, 160; land-slip at Whitby, 476; land, surplus, 106, 220
Land and Building Societies:— Accrington and District Permanent Building Society, 69; Conservative Land Society, 33, 287, 440; County of Southampton Provident Permanent Building Society, 233; Durham County Permanent Building Society, 268; Equitable Permanent Land and Building Society, 160; Exeter Provident Permanent Building Society, 440; Guardian Permanent Building Society, 440; Haslingden Benefit Building Society, 33; Improved Industrial Dwellings Company, 69, 124, 409; Irish Civil Service Building Society, 142; King's Cross Industrial Dwellings Company, 51; Leeds Provincial Building and Investment Society, 440; London Labourers' Dwellings Society, 233; Newhaven and Seaford Building Society, 402; Perpetual Investment and Building Society, 51; Rochester Building Society, 51; Tunbridge Wells Permanent Mutual Benefit Building Society, 160; Union Building and Investment Society, 268; Westward Ho! Villas Company, 177; York Permanent Building and Investment Society, 476
Landing pier, Douglas, 52
Large caisson, a, 409
Lateran Museum sculptures, 147
Lathe for banister rails, 107
Launching a great caisson, 78
Law, architects and the, 20, 33, 381, 383, 395; Law Courts, the new, 13, 52, 94, 102, 107, 341, 403, 421; law, sanitary, 247
Laws on patents, the, 193, 249
Laying out of curves, 227, 385
Lead poisoning, 142, 246, 440
Leaky roofs, 233
Learned societies, house for, 362, 451
Leavesden Industrial Schools, 95
Lectures: Ruskin's, 264, 282, 301; Slade, 377
Leeds workhouse infirmary, 213
Legal status of building societies, 60
Legal Intelligence:—Alleged slander, 15; ancient lights, 15; apprentices, 440; Archbold *v.* Margerison, 287; architect's claim, an, 34; architects' drawings, 357, 373, 421; architects and the law, 20, 33, 34; architects and minors, 15; Attorney-General *v.* Great Eastern Railway Company, 402; Bankruptcy case, 69; Barret *v.* City of London Real Property Company (Limited), 15; Bavage *v.* Grant, 341; Blackburn sewage, 122; breaches of

the Hull Building Regulations, 359; Brighton Water Company v. Marshall, 122; builder committed for manslaughter, a, 197; Building Act, the, 197, 264; building commission, 122; Campbell v. Hornblower, 360; cargo of lathwood, 34; chancel gates, St. Mary's, Taunton, 34, 142, 251, 323, 360; Chapman v. Lee and others, 69; Chatterton v. Nelson, 15; claim for stone, 177; claim for supply of cement, 177; claims, plasterers', 287, 476; collateral liability, 142; compensation cases, 215, 457; contractor's dispute, a, 323; Coo v. Bedford, 122; Cornish Granite Company, 377; Crown rights on highways, 268; Crump v. Tooley, 142; damages by tenant, 440; disputes as to stonedressing, 69; disputed contracts, 142, 268; District Surveyors' fees, 304; diverting water, 402; Ebdy v. McGowan, 20, 33, 357, 373, 421; Ellis v. Carr and others, 69; Epping sewerage, the, 458; Farrel v. Vincent, 34; Feilden v. Corporation of Blackburn, 122; fencing land, 51; forming a handrail, 402; frauds on builders, 376; Furnival v. Pybus, 359; ground stories, 284; Haddon v. Morton and Co., 122; Hornblower v. Campbell, 360; house agents and their commission, 122; Humphries v. Potter, 287; insufficient foundations, 69; joiners' cases, 177, 377; Jones v. St. John's College, Oxford, 402; Kimber v. Honour, 476; Knightley v. Yates, 284; Kreuger v. Blanch, 34; Lambeth potteries' nuisance, 268; legal rights of architects, the, 20, 33; legal status of building societies, 60; liability to fence land, 51; Long v. Cohen, 197; Lundy Granite Company, the, 360; Macrea v. Holdsworth, 402; Magnus's bankruptcy, 69; manslaughter, 197; masters and apprentices, 440; Merchant Taylors' Company v. Metropolitan District Railway Company, 457; Metcalfe v. Ditchmond, 268; Metropolitan Board of Works v. the Parish of West Ham, 458; Morley v. Nelson, 142; Mountstephen v. Lakeman, 142; Munns v. Isle of Wight Railway Company, 15; Noden v. King, 232; original and collateral liability, 142; Paget v. Somerset Coal Company, 51; penalties for delay, 402; percolation of sewage, 122; Queen (the) v. the Inhabitants of Chart and Longbridge, 15; railway companies diverting water, 402; rating of sewers, the, 458; registered designs, 402; repair of public bridges, 15; right of way, 304; Royalty Theatre, 232; Saint v. Thomas, 402; sale by tender, 440; Sefton Park dispute, 360; slander, 15, 142; Slunn v. Vestry of Lambeth, 232; Spencer v. Harding, 440; stone-dressing, 69; Trickett v. Wedekind, 177; unpaid vendor of land to a railway company, 15; usage with regard to plans, 421; Wallis v. Kemp, 15; Watson v. Brown, 177; Watts v. Sheard, 323; Welchman v. Hodson, 232; Woolwich Local Board v. Royal Engineers, 268; Wordyeat v. Macdonald, 440; workmen's wages, 232; Wright v. Reddy, 177; Yeeles v. Grey and others, 304
Leicester: the Archæological Institute at, 85, 94, 120; Castle, 94; fonts at, 168
Leicestershire Architectural and Archæological Society, 435
Leigh's Priory gateway, 48
Leiston Abbey, 47
Letter-boxes, 161
Library, Salford, 444
Liberal local board, a, 216
Life of an octogenerian architect, 407
Lifting shops at Northwich, 305
Lighting towns, 494
Lime: burning, 15; mortar and, 494
Limited competitions, 357
Lincoln: Diocesan Architectural Society, 13; St. Mary-le-Wigford, 477; St. Swithin's, 22
Lincolnshire, architectural excursion to, 52, 69, 173
Lines for sashes, steel ribbon, 305
Literary Institution competition, Bradford, 4, 52
Liverpool: arbitration, at, 95, 275; Architectural Society, 113, 114, 131, 284, 341, 357, 473; building trades, 95; Church of SS. Matthew and James, 464; house-painters' soirée and ball, 161; masonry, 28, 32; railways, 269; workmen's dwellings, 337
Llanbadarn-fawr Church, 148
Llandewednack Church. fonts at. 335
Llantwit Church, cross at, 114, 141, 159, 176, 214
Loan paintings: South Kensington, 308, 328; water-colour, 361
Local Boards: Accrington, 233; of health, 245; liberal, 216; surveyors to, 471
Locks and weirs on the Severn, 107
Lodge at Kirtlington Park, 6
London: air, 269; architects and builders, 254, 292; Chatham and Dover Railway, 161; Corn Exchange competition, 17, 20; London and County Banking Company, 122; London: gas supply, 299; graveyards, 34, 39; Education Board, 276, 410; Hospital fire-extinguishing appliances, 283; improvement of, 343; memorials, 341; London and Middlesex Archæological Society, 213; London, oil-spring, in, 178; water, 132
Long railway journeys, 235
Ludlow Castle, 75
Lump contracts, 344, 380, 419, 438
Lytham Cottage Hospital, 299, 321, 358, 375

MACHINERY: brick-making, 85, 240, 299; drilling, 96; wood-carving, 396
Malton: new bridge, 216; Priory, 168
Matlock Church competition, 265
Manchester: Abattoirs competition, 37; accident at, 178; exhibition, 199; Institute of Engineers, 85; new park at, 142; notes from, 77
Mania, the Queen Anne, 271
Manilla, earthquake at, 239
Manor, South Wingfield 93
Mansions: Birdcage-walk, 236; crenellated, 75; Gallowhill, 276
Maps for the Prussian army, 216
Marble, 28; marble from the Island of Tyree, 283
Margate Jetty competition, 60
Maritime ship canal, 197
Markets: Billingsgate, 418; Covent Garden, 217, 250, 267; destruction of a, 125: proposed poultry, 125; Santiago, 161; Whitchurch, 305
Marylebone: improvements in, 374; sanitary state of, 150
Masonry, 12, 28, 32
Mausoleum, proposed national, 22
McDowell, Patrick, 473
Mechanical: amateurs, 421; Engineers, Institution of, 125
Mediæval: architecture, 427, 451; ironwork, 444
Mediævalists of Southern Italy, 361
Meeting of the British Association, 142
Memoir of the late Raffaelli Politi. 434
Memorials: Marquis of Westminster, 329; old London, 341
Metal: arches, 436; casting, 70
Metallic bridges, 397
Methods of: lighting towns, 494; preparing mortar. 84
Metropolitan: Association for Improving the Dwellings of the Industrious Classes, 34; Board of Works, 15, 125, 143, 272, 288, 360. 403; Building Act, 264; cemeteries, 39; District Railway, 201; gas, 48: Railway surplus land competition, 150: tramways, 470; Vandalism, 310
Mica as a substitute for bronze, 34
Michael Angelo Exhibition, the, 57
Middleton-in-Teesdale, accident at, 440
Midland Counties' brick trade and slavery, 274, 323
Midland Institute, the, 102, 194, 213; Midland Institute of Mining Engineers, 125
Mid-London road and railway, proposed, 5
Mile-end, technical education at, 216
Miilstones, Roman 194
Milner's safes, 251
Mines, ancient, 30
Mining: Engineers, Institute of, 125; Institute, Dudley, 246
Mint, the new, 398
Modern and ancient houses, 22
Modes of fenestration, 325
Modifications of sanitary law, 247
Monster hotel, a, 233
Mont Cenis tunnel, the, 488
Monumental: clock for Beauvais Cathedral, 372; cross, discovery of, 86
Monuments: ancient national, 299; of art, 487; Bangor Cathedral, 150; found at Colchester, 102; in the Hebrides, 276; the Wellington, 109, 121, 359
More demolitions in the Strand, 403
Mortar, 12, 84; mortar and lime, 494
Mortuaries, 106, 246, 323
Museums: Architectural, 69, 304, 362; Ashmolean, 403; British, 94, 103; East London, 458; South Kensington, 1, 55, 73, 93, 105, 111, 127, 178, 291, 308, 310, 325, 328, 379, 405, 423

NAILS for outdoor work 96
National: Competition drawings, South Kensington, 1, 51; Engineers' Association, 41; Gallery, the, 86, 94; mausoleum, proposed, 22; monuments, ancient, 299; Technical College, 458
Nave arcade, Worksop Priory, 388
Navigation of the Thames, 197
Nebraska, artesian well at, 341
New: breakwater at Wick, 107; bridge at Malton, 216; bridge over the Tees, 421; British Institution, 382; chairman of the Board of Works, 403; City Hall, San Francisco, 233; Congregational Church, Stamford-hill, 335; Corn Exchange, Sheffield, 210; elements of handrailing, 185, 204, 222, 258, 276, 287, 294, 322, 329, 348, 366, 388, 410, 428, 446, 464, 482; Forest, the, 150; General Post-office, 474; graving dock at Greenwich, 160; harbour, Torquay, 160; Home and Colonial Offices, 30; Law Courts, 13, 52, 94, 102, 107, 341, 403, 421; market for Santiago, 161; market hall, Whitchurch, 305; method of lighting, 494; Mid London road and railway, 5; Mint, the, 398; mortuary buildings, 246; park at Manchester, 142; pier, Douglas, 52; poultry market, proposed, 125; process of casting metals, 70; railway works in Liverpool, 269; refreshment rooms, House of Commons, 31, 60; road in South London, 403; streets, Holborn Viaduct, 34; St. Thomas's Hospital, 4; submarine bridge at Stamboul, 233; theatres, 384; tower, Cardiff Castle, 428; waterworks for Bolton, 40; workhouse for Clitheroe, 60
New York, altar at, 410
Newark Priory, 65
Newcastle-on-Tyne, 138, 219, 237, 255
Newington Green, 6
Newport School competition, 462
Nineteenth century, the, 426
North of England Institute of Mechanical and Mining Engineers, 143
North: London Railway, 396; London tramways, 233; Metropolitan tramways, 470; Oxfordshire Archæological Society, 194
Northamptonshire Architectural Society, 302
Northern: Architectural Association, 221, 462; Architectural Students' Society, 337
Northumberland tumuli, 194
Northwich, lifting shops at, 305
Norwegian art, 220
Norwich: door-hinge at, 487; exhibition of paintings, 341
Notes: from Glasgow, 209, 232, 293, 453, 490; from Manchester, 77; from Newcastle-on-Tyne, 219, 237, 255; in Parliament (see "Parliamentary Notes"); practical, 87
Nunnery tombstones, Iona, 451

OAK cabinet, 132
Obituary: Baird, George, 178; Bates, —, 216; Bourne, William, 458; Braithwaite, John, 251; Brassey, —, 458; Burn, —, 354; Carter, W. A., 360; Fox, Rev. S., 216; Garling, H., 354; Giles, James, R.S.A., 288; Herford, Miss, 476; Hopkins, J. D., 354; Horsley, T. J., 70; McDowell, Patrick, 473; Morrison, Alexander, 403; Papworth, J. W., 354; Politi, Raffaelli, 434; Pyne, J. B., 107; Svoboda, M., 251; Thorpe, Benjamin, 107; Thwaites, Sir John, 125; Wade, Robert, 216; Webber, George, 33
Observations on the west front of Wells Cathedral, 394
Octogenarian architect, an, 407
Offices for the City of London Union, 319, 462
Oil spring in London, 178
Old: Blackfriars-bridge, 305; bridge at Taunton, 157; house-building, 273; house at Thorpe, 132; London memorials, 341; Malton Priory, 168; Masters, Exhibition of, 323, 445, 479; oak cabinet, 132; paint, removing, 281; priories, 65
Open spaces, 155, 233; open spaces: on the Albert Embankment, 494; in Hackney, 494
Opening of a new railway in Scotland, 453; opening of tumuli in Northumberland, 194
Opera Comique Theatre, 150, 323
Operative Carpenters and Joiners' Society, 470
Ornament, Greek and Etruscan, 470
Ornamental: art, 274, 299, 311, 336, 347, 364, 384, 408, 426, 445, 488; decoration, 5, 14, 41, 59, 83; water in the parks, 49
Organ at Eton College Chapel, 143
Oswestry Cottage Hospital, 220
Our ancient national monuments, 299
Out-door work, nails for, 96
Ownership of architects' drawings, 320, 357, 373, 381, 383, 395, 398, 419, 421, 460, 475
Oxford Architectural Society, 401, 418

PAINT: quick-drying inodorous, 318; removing, 281
Painted cabinet, 354, 376
Painting: by means of injection, 233; carriages, 168; fresco, 454; siliceous, 472
Paintings: loan, 308, 328; Roman wall, 291; water-colour, 361, 424
Paints, adulteration of, 66
Paisley water supply, 399
Palaces: Alexandra, 197, 345; Crystal, 288, 289
Parisian: art treasures, 305; cemeteries, 52
Parks: Alexandra, 197, 345; Hyde, 49; Manchester, 142; Regent's, 49; Southwark, 60, 102; St. James's, 49
Parliamentary Notes:—Assistant Surveyor of Works, 31, 34, 38, 70, 124; British Museum, 94, 103; building on the Thames Embankment, 15, 31, 48, 49, 60; carriage-way through St. James's Park, 49; Courts of Law, the new, 13, 52, 94, 102; East London water supply, 86; gas of the metropolis, 48; Home and Colonial Offices, 30; House of Commons' ladies' gallery, 48; House of Commons' refreshment rooms, 31, 60, 86; Indian Engineering College, 122; Museum of Natural History, 31, 94, 103; National Gallery, the, 86, 94; ornamental water in the parks, 49; science examinations, 121; Serpentine, the, 49, 69; site of the New Law Courts, 13; Southwark Park, 60, 102; Sunday labour on the Thames Embankment, 49; supply, 86, 103; Thames Embankment, 15, 31, 48, 49, 60; Thames sewage, 30; utilization of sewage, 60; votes for various public buildings, 87, 103; Wellington monument, the, 121; Westminster subway, the, 49, 52
Patent laws, the 193, 249; patent Victoria stone, 14, 32, 50, 68
Patrick McDowell, R.A., 473
Pavements, Roman, 30, 70, 175
Paving: asphalte, 58, 73, 462; by steam, 142; tar, 73
Payment for "extras," 89
Penalties for breach of contract, 341
Pennethorne, Mr., 230
Perplexities of building, 13, 50, 68, 234, 377
Perspective, 445
Pictish castles, 139
Pier, Douglas, 52
Pigments, artists', 396
Pillars at St. Swithin's, Lincoln, 22
Planning, defective, 161
Plans, 421; plans of ancient abbeys and priories, 47, 65; "plans and specifications included," 421
Plaistow, St. Andrew's Church, 191, 209, 388
Plate-glass, 184
Poisoning by lead, 142, 246, 440
Police Vandalism, alleged, 21, 51, 52
Politi, the late Raffaelli, 434
Pollution of rivers, 201, 402, 480
Poplar, road-rolling at, 70
Porcelain, Derbyshire, 183
Portable drilling machinery, 96
Post-office: Building Trades' Directory 246; Engineers', Iron, and Metal Trades' Directory, 409; General, 310; new General, 474
Pottery, Derbyshire, 183
Poultry market, proposed, 125, 140
Practical notes, 87
Practice of house decoration, 101, 119, 137, 155, 173, 191, 263, 281, 317, 353, 393, 433, 469; practice rather than theory, 192
Prairie timber, 440
Pre-empted sites for schools, 306
Pre-historic remains of Dartmoor, 30
Preparing mortar, 84
Preservation of antiquities, 30, 50
Preston market, destruction of, 125
Prevention of lead poisoning, 246
Priory: chapel at Isleham, 48; church, Dunstable, 366; church, Worksop, 388; gateway, Leigh's, 48, Old Malton, 168
Priories, old, 65
Prismatic compass, the, 167
Prizes: Architectural Association, 337; Royal Academy, 443
Prussian army maps, 216
Process of casting metals, new, 70; process for softening water, 437
Processes, decorative, 317, 353, 393, 433, 469
Professional usage with regard to plans, 421
Projected: boulevard for Hull, 106; tunnel under the Mersey, 494; works in London, 355
Promenade, Blackpool, 403
Proposed: Assistant Surveyorship of Public Works, 31, 34, 38, 70, 124, 163; canal at Cape Cod, 16; Corn Exchange, Sheffield, 210; Great Western canal, 197; improvements at Shoreditch, 323; improvement at Wapping, 305; Mid-London road and railway, 5; national mausoleum, 22; new bridge across the Tees, 421; new poultry market, 125; new road in South London, 403; public hall for Harrow, 440; public works, 403; tramway in Shoreditch, 143
Prospective growth of timber, 440
Protecting bronze from discoloration, 87
Provincial works, 356
Public: hall for Harrow, 440; structures, damaging, 288; Works, Assistant Surveyorship of, 31, 34, 38, 70, 124, 163; works in the Isle of Man, 52; works, proposed, 403
Publication Society, Architectural, 39
Publications, Notices of:—Ancient Irish Architecture, 408, 489; Autobiography of an Octogenarian Architect, 407; Digest of Facts Relating to the Treatment and Utilisation of Sewage, 400; Disposal of Town Sewage, the, 102, 400; Elementary Problems in Practical Plane Geometry, 400; Elements of Practical Perspective, 400; Goodeve's Elements of Mechanism, 400; Handy Book of the New Law of Bankruptcy, 102; Land and Houses, 157; Metals, their Properties and Treatment, 400; On the Application of Wrought and Cast Iron to Building Purposes, 102; On the Economy of Road Maintenance and Horse Draught through Steam Road Rolling, 73; Pewtner's Comprehensive Specifier, 102; Pottery and Porcelain of Derbyshire, 183; Post Office Building Trades' Directory, 246; Post Office Engineers', Iron, and Metal Trades' Directory, 409; Practical Solution of the Great Sewage Question, 157, 400; Report of the Streets Committee of the City of London Commissioners of Sewers on the Val de Travers Compressed Asphalte Carriageway Pavement, 102; Rudimentary Manual of Architecture, a, 271; Stables and Stable Fittings, 158; Sussex Archæological Collections, 158; Thirteenth Annual Report of the Board of Commissioners of the Central Park, New York, 400
Purification: gas, 221, 341; sewage, 398
Pyne, the late J. B., 107
Pyramids, the, 160

QUALITY of building stone, 166
Queen Anne mania, the, 271
Quick-drying inodorous paint, 318

RAFTERS, strains in, 415
Raffaelli Politi, 434
Railroad, a wooden, 341
Rails for banisters, 107
Railways: cheap, 106; excavations and embankments, 245, 319; Glasgow Union, 453; Great Western, 197; items, American, 197; journeys, long, 235; London, Chatham, and Dover, 161; Metropolitan District, 201; North London, 396; proposed Mid-London, 5; rating of, 417, 472, 491; the Skye, 107; steep, 58; works in Liverpool, 209
Range, the kitchen, 29, 114
Raphael Exhibition, the, 57
Rating of railways, 417, 472, 491
Rocognition of a surveyor's services, 143
Red Castle, 76
Refreshment rooms: House of Commons, 31, 60; South Kensington Museum, 55, 73, 105
Refusal to consecrate a church, 13
Refusing honours, 16
Regent's Park lake, 49
Regulations for hoardings in the City, 70
Reisner work, 433
Remains: Dartmoor prehistoric, 30; Holbury, 220
Remedy for lump contracts, 344, 380, 419, 438
Removal of Temple Bar, 121, 143
Removing oil-paint from wood, 281

Repairing leaky roofs, 233
Report of the Metropolitan Board of Works, 272
Reredos for Cheddington Church, 111; reredos, Plaistow, 209
Restoration of Bath Abbey, 435
Resuscitation of the Architectural Exhibition, proposed, 362, 375
Retirement of Mr. Pennethorne, 230
Rheims Cathedral, 194
Ribchester, Stydd Chapel, 487
River pollution, 201, 402, 480
Road-rolling by steam, 16, 70, 73, 141, 161, 276
Roads: proposed Mid-London, 5; proposed South London, 403
Robbing a foundation stone, 341
Rochester Castle, 299
Rock asphalte paving, 73
Rollers, steam, 16, 70, 73, 141, 161, 276
Roman: altar, 139; antiquities, 19; millstones, 194; monument found at Colchester,102; pavements, 30, 70, 175; remains at Holbury, 220; sculptures, 147; wall-paintings, 291
Rome, grand prize of, 196
Romford sewage farm, 157
Roofs: asphalte, 288; Crowhurst-place, 11; leaky, 233
Rotten wood-dust. 66
Rouen, Hotel de Ville, 312
Royal: Academy, 16, 37, 78, 107, 323, 376, 403, 425, 443, 445, 474, 475, 476, 479; Archæological Institute, 19, 30, 85, 94, 120; Architectural Museum, 69, 304; Commission on the Pollution of Rivers, 201, 402, 480; Commission on Water Supply, 91; Engineers, 16; Historical and Archæological Association of Ireland, 86; Institute of British Architects, 264, 318, 354, 382, 394, 398, 403, 406, 419, 425, 434, 438, 456, 460, 462, 475, 478, 489; Insurance Company, 125
Rudiments of architecture, 271
Running sand, sewers in, 256
Ruskin's lectures on art, 264, 282, 301

SAFES, Milner's, 251
Salford, library at, 444
Salisbury Diocesan Church Building Society, 49
San Francisco City Hall, 233
Sanchi tope, the, 477
Sanitary law, 247; sanitary matters (see "Water Supply and Sanitary Matters.")
Santiago, market for, 161
Sash line, steel ribbon, 305
Save our forest trees! 138
Sawing stone, 228
Scaffold accidents, 234, 240
Scholarships, Whitworth, 125, 197, 251
School sites, 305
Schools for the Commissioners of the Patriotic Fund, 357; (for schools see also "Building Intelligence.")
Schools of Art:—Aberdeen, 120; Barnstaple, 285; Birkenhead, 120; Birmingham, 120; Bloomsbury, 120; Bradford, 120; Bridport, 139; Brighton, 265; Bristol, 120; Bromsgrove, 302; Burslem, 120; Camberwell, 285; Cardiff, 440; Charterhouse, 120; Coalbrookdale, 120; Coventry, 120; Derby, 357; Devonport, 265; Dorchester, 248; Dover, 139; Dover-road, 285; Dublin, 120; Dudley, 120; Edinburgh, 120; Frome, 120; Glasgow, 120; Great Yarmouth. 120; Guildford, 357; Halifax, 120; Hanley, 120; Hull, 357; Islington, 374; Kensington, 470; Lambeth, 120, 357; Leeds, 120, 455; Lincoln, 120; Long Acre, 120; Manchester, 120; Mile End, 216; Newcastle-on-Tyne, 120; Newcastle-under-Lyne, 120, 455; Newington, 455; North London, 120; Norwich, 120; Nottingham, 120; Oxford, 120; Paisley, 120; Penzance, 374; Portsmouth, 338; Rochdale, 248; Ryde, 194; Sheffield, 120; Sherborne, 60; Somer's Town, 285; Southampton, 374; Spitalfields, 120; Stepney, 285; Stoke-on-Trent, 120; St. Martin's, 120; Sunderland, 120; Taunton, 265; Torquay, 265; Wakefield, 120; Wandsworth-road, 285; Warrington, 120; West London, 120, 455; Weston-super-Mare, 410; Wolverhampton, 89; Yarmouth, 194; York, 338
Science: in architecture, 12, 28, 32; examinations, 121; industry and, 275
Science and Art Department, 178
Scientific societies' house, 362, 451
Scott, illness of Mr., 377, 440
Sculpture: Royal Academy, 37; Lateran Museum, Rome, 147
Seashore iron, 462
Sepulchral monuments, Bangor Cathedral, 150
Serpentine, the, 49, 52, 69
Severn locks and weirs, 107
Sewage: contamination, 398; farm, Romford, 157; irrigation, 52; purification, 398; sanitary works and, 246, 267; Thames, 30; treatment of, 281; utilisation, 60, 229
Sewer, the Fleet, 304
Sewers in running sand, 256
Shaft, an expensive, 246, 286
Sheet-glass, 184
Sheffield Corn Exchange, 210
Sherborne School of Art, 60
Shoplifting extraordinary, 305
Shoreditch: improvements, 323; tramway, 143
Ship canal, proposed, 197
Shropshire castles, 75
Silica, 318
Siliceous painting, 472
Silver medal, presentation of, 216
Sir John Thwaites, death of, 125
Sites: New Law Courts, 13; for schools, 305
Sketchbook (See BUILDING NEWS "Sketchbook")
Skye railway, the, 107
Slade lectures at Oxford, 377
Slate: trade, the, 234; uses of 209
Slates, American, 156
Slave children in the Midland Counties, 274, 323
Smallpox in a restaurant, 494
Smoke Nuisance Act, the, 269
Smoky chimneys, 12
Social Science Congress, 125, 245, 246, 247
Society of Arts, 377, 396, 454, 472, 494; Society of Engineers (see "Civil Engineering"); Society of Painters in Water-colours, 424
Softening water, 437
Soirees: Liverpool housepainters', 161; Royal Academy, 16
Some account of St. Mary Major's, Exeter, 132
Somersetshire Archæological Society, 66, 102, 166, 357
Something wrong with the Institute, 382, 419
South Kensington: drawings at, 1, 51; Museum, 1, 55, 73, 93, 105, 111, 127, 178, 291, 308, 310, 325, 328, 379, 405, 423
South London: improvements, 143; tramways, 178, 233, 269, 458
South Wingfield Manor, 93
Southern Italy, styles of, 361
Southwark Park, 60, 102
Spaces, open, 155, 233
Spanish jewellery, 310
Specifications, writing, 56
Stafford, 89
Stained Glass:—Barnard Castle, 177; Biggleswade, 440; Bloxworth, 89; Castle Hedingham, 288; Chiddingfold, 51; Coniscliffe, 15; Cork, 33; Edinburgh, 288; Fairford windows, the, 89, 94; Furness Abbey, 15; Gloucester, 215; Guildhall, 359; Hampton Lucy, 25, 29; Hinton St. Mary, 15; Lichfield, 440; Lickey, 15; London, 359; Mark, 33; Manchester, 476; Pittenweem, 160; Redditch, 251; Ripon, 288; Sheffield, 215; Southwold, 215; Steyning, 177; Thetford, 215; Westhoughton, 197; windows, the Fairford, 89, 94; Wolverton, 89; York, 251, 476
Stamboul, new bridge at, 233
Stamford-hill Congregational Church, 335
State, architecture and the, 355
Station, Holborn Viaduct, 443
Status of: building societies, 60; civil engineers, 415
Statues, Memorials, &c.:—Albert Memorial, Hyde Park, 33, 402; Birmingham, 125, 215; Brampton, 125; Brewster memorial statue, the, 106; Cambridge University, 288; Carlisle, 215; Cross for the Rock of Cashel, 69; Earl of Carlisle, 125; Edinburgh, 160, 178, 359, 376; Gloucester, 402; Groeswen, 359; Hull, 160, 305; Humphry Davy, 251; Hyde Park, 402; Kensington, 288; Kepler, 251; Lichfield, 288; Liverpool, 197, 341; Longley Memorial, the, 288; Loughborough, 178; Much Wenlock, 69; Nice, 142; Raith, 160; Regent's Park, 376; Rock of Cashel, the, 69; Rowland Hill, 125, 215; Smollett Testimonial Fountain, Alexandria, 33; Stonewall Jackson, 142; Torrington, 376; Watts, works by Mr., 288; Wellington monument, St. Paul's, 109, 121, 359; Westminster, 376; York, 233
Steam paving, 142; steam road-rolling, 16, 70, 73, 141, 161, 276
Steel ribbon sash-line, the, 305
Steep railway, a, 58
Stencilling, 317, 353, 393
Stinking town, a, 89
Stoke Newington-green, 6
Stokesay Castle, 76
Stone: artificial, 318; carvings, Gothic, 348; sawing, 228; tests of, 166; Victoria, 14, 32, 50, 68; waterproofing, 440
Stonehenge, 30
Story, the ground, 284
Strains in rafters, 415
Strand, demolitions in, 403
Strasburg Cathedral, 194, 258, 283, 311
Street: architecture by Mr. Arthur Cates, 253; cleansing and watering, 106; confusion, 240; door letter-boxes, 161; dust, 305; improvements in South London, 143; metalling and tramways, 222; paving, 142; tramways, 418, 458
Streets, Holborn Viaduct, 34
Strength of floors, 319
Structural in architecture, the, 365
Structures, fireproof, 181
Stydd Chapel, 487
Styles: of animal architecture, 233; of Southern Italy, 361
St. Alban's Abbey doorway, 60; St. Alban's Archæological Society, 48, 102; St. Andrew's, Plaistow, 191, 209, 388; St. Augustine's, Hedon, 221; St. Chad's, Haggerston, 191; St. James's Park, 49; St. Louis Bridge, the, 305; St. Luke's chancel, Torquay, 435; St. Mary Major's, Exeter, 132; St. Mary-le-Wigford, Lincoln, 477; St. Matthew and St. James's, Liverpool, 464; St. Pancras Industrial Schools, 95; St. Paul's Cathedral, 22, 48, 109, 127, 359, 360; St. Peter's, dome of, 6, 50; St. Saviour's, Eastbourne, 41; St. Saviour's, Southwark, struck by lightning, 86; St. Swithin's, Lincoln, 22; St. Thomas's Hospital, 4
Submarine bridge at Stamboul, 233
Substitute for bronze, 34
Subterranean basilica at Rome, 291
Suburban villas, French, 113, 131
Subway, Westminster, 49, 52
Sudden death of an architect, 360
Suffolk: Archæological Institute, 48, 86, 138; Archæological Society, 13
Suggested amalgamation of architectural societies, 355
Suggestions for workmen's exhibitions, 111
Suitable ground floors, 95
Sulphur in gas, 341
Sunday labour on the Thames Embankment, 49
Sundry: buildings in the Isle of Thanet, 164, 181, 200, 214, 217, 249; castles in Shropshire, 75; decorations at Kensington Museum, 93, 127
Supply: of gas to London, 299; of water to East London, 86; of water to Jerusalem, 34; of water to Paisley, 399
Surcharge on a local board, heavy 233
Surplus land in the City, 106, 220
Surrey: Archæological Society, 121; Gardens, 125
Surveyor, the:—Assistant Surveyor of Works, 31, 34, 38, 70, 124, 163; Bethlehem Hospital Surveyorship, 482; charge against a surveyor, 421; Institution of Surveyors, 35, 371, 403, 417, 472, 491, 492; laying out curves, 227, 385; prismatic compass, 167; rating of railways, 417, 472, 491; recognition of a surveyor's services, 143; surveyor, a, in 1678, 375; surveyor, testimonial to a, 143; surveyors to local boards, 471
Sussex Archæological Society, 48, 139, 213
Swansea Guildhall Competition, 60
Swedish art, 301
Sydenham, Egypt at 289
Systems of floors, 319

TABLES for railway excavations, 245, 319
Tar paving, 73
Taste in art, 363, 463
Taunton, old bridge at, 157
Technical education, 307, 339, 458; technical education at Mile End, 216; technical instruction in Holland, 145
Temple Bar, 121, 143
Terminus, Euston, 284
Tests of: building stone, 166: metallic bridges, 397
Tesselated pavements, Roman, 30
Texas, emigration to, 284
Thames: Embankment, 15, 31, 48, 49, 51, 60, 112, 178, 200, 233, 251, 305, 341, 397, 494; navigation, 197; sewage, 30
Thanet, Isle of, 164, 181. 200, 214, 217, 249
Theatres: Opera Comique, 150, 323; new, 384
Theory of the arts, 3, 76, 130, 165, 218, 291, 454, 487; theory of house decoration, 101, 119, 137, 155, 173, 191, 263, 281, 317, 353, 393, 433, 469; theory of metal and timber arches, 436; theory and practice, 192
Thwaites, death of Sir John, 125
Thorngate Footbridge competition, 4
Thoroughfares, dusty, 246
Thorpe, house at, 132
Timber, 23; timber, ailanthus, 52; timber, growth of, 440; timber and metal arches, 436
Tombs: Charlemagne's, 489; Guglielmo da Castelbarco's, 65, 88, 105
Tombstones: Charles Dickens', 258; Nunnery, Iona, 451
Tope, the Sanchi, 477
Torquay: harbour, 160; St. Luke's Church, 435
Tower, Cardiff Castle, 428; tower gateway, Leigh's Priory, 48
Town, a stinking, 89; town churches, 203, 214, 238
Town Hall, Winchester, 194; (for Town Halls see also "Building Intelligence")
Trajan's Arch, Ancona, 221
Tramways: Bristol, 418; Edinburgh, 216; Metropolitan, 470; North London, 233; Shoreditch, 143; South London, 178, 233, 269, 458; street metalling and, 222; wire, 107
Transportation of earth, 148
Treasures of art in Paris, 305
Treatment of: brickwork, 322; open spaces, 155
Trees: ailanthus, the, 52; elm, 58; Forest, 138, 150
Trials of cements, 114
Triangular drawing-board, 403
Tumuli: Hebrides, 276; Kellythorpe, 285; Northumberland, 194
Tunnels: Mersey, 494; Mont Cenis, 488
Turners' Company, the, 216
Turning banister rails, 107
Two modes of fenestration, 325
Tyree marble, 283

UNDERNEATH the Victoria Embankment, 200
Unfounded charge against a surveyor, 421
Unhealthy foundations, 409
United States brick machine, the, 240
University College, decorations at, 288
Upshot of Mr. Barry's case, 236, 267, 398
Usage with regard to plans, 421
Use and abuse of colour, 5, 14, 41, 59; use of colour in architectural diagrams, 386
Useful in architecture, the, 365
Uses of slate, 209
Utility of decoration, 83
Utilisation of sewage, 60, 229

VACANT building land in the city, 220
Value of land at Hampstead, 160
Vandalism: metropolitan, 310; police, 21, 51, 52
Variations in animal architecture, 233
Various kinds of silica, 318
Ventilation: cellars, 138; hospitals, 30, 461, 480
Verona, tomb at, 65, 88. 105
Viaduct, Holborn, 34; Viaduct station, Holborn, 443
Victoria: Embankment, 51, 178, 200, 233, 341, 397; Legal Friendly Society, 52; stone, 14, 32, 50, 68
Views of Christ Church, Clapton, 101
Village water supply, 192
Villas, French suburban, 113, 131
Visit to Conway Castle, 247
Voluntary Examination, 264

WAGES MOVEMENT:—Bath, 360; Bolton, 53, 476; Bradford, 16; Bristol, 35; Carpenters' and Joiners' Society, Operative, 470; Dundee, 179; Edinburgh, 378; Liverpool, 95, 274; London short time movement, 126, 144, 179; Manchester, 179; Windsor, 197; Witton Park, 422
Walks, gravel, 58
Wall-paintings: Norfolk, 338; Rome, 291
Walls of Conway, the, 357
Wanted, mortuaries, 106
Wapping, improvement at, 305
War, the, and Strasburg Cathedral, 194, 258, 283
Warburton Church, 294
Water in the parks. ornamental, 49
Water Supply and Sanitary Matters:—A.B.C. process, 142; Act, the Sanitary, 160; Aire and Calder, the, 177, 480; Alfreton, 341; Ashford, 51, 142; ashpits and dust-bins. 309; Aylesbury, 69, 106; bad water, 91; Banbury, 177; Barnard Castle, 142, 160. 215, 440; Beddington, 52; Bedford, 106; Berwick, 142; Bideford, 106, 287; Birmingham, 106, 233; Blackburn, 51, 122, 420; Bolton, 33, 40; Brentwood, 69; Bridport, 33, 420; Brighton, 124, 197; Bristol, 160; Bromsgrove, 251; Burton-upon-Trent, 359; Calder, the, 177, 480; Camborne, 33; Cambridge, 51, 440, 458; Canterbury, 437; Castle Northwich, 197; Cheltenham. 160, 287; Chester-le-street, 106; Chesterfield, 142; Chorley, 124; cisterns, household, 451; Clark's water-softening process, 437; cleansing the streets, 106; Clerkenwell, 233: Cleveland, 420; Coatham, 51; contamination of water by sewage, 398; Coventry, 160; Croydon, 106; Darlington, 197; diseases and geological systems, 437; disinfection of sewers, 89; disposal of town refuse, 124; distribution of water in cisterns, 451; domestic hygiene, 29, 114; Doncaster, 89, 359; drainage of Lincoln, 251; Dronfield, 106; dry ash-closets, 69; Dublin, 323; Dundee, 268, 309; dusty thoroughfares, 246, 305; duties of sanitary committees, 106; Ealing, 421, 439; Edinburgh, 359; Ely, 106; Epping, 458; Esher, 106; Eton, 142; Exeter, 420; Falmer, 376; farms, sewage, 159, 341; Fleet sewer, the, 364; good water, 91; Great Harwood. 402; Guildford, 376; Handley, 142; Hanley, 89; Hatfield, 51; Hornsey, 177; household cisterns, 451; How shall sewage be treated? 201; Hull, 51, 124; Hurworth-on-Tees, 142, 268, 420; Indian sewage farm, 341; "Jack Ketch's Warren," 233; Jersey, 197; Jerusalem, 34; Kidderminster, 323; Lambeth, 304; Lambeth potteries nuisance, 268, 269; Lambeth workhouse, 420; Lead poisoning, 246; Leamington, 51; Lincoln, 251, 287; local boards of health, 245; London water, 132, 177; Lord Derby on sanitary reform, 177; Maldon, 304; Marylebone, 39, 150; Merthyr, 177; Middlesborough, 287; modifications of sanitary law, 247; mortuaries, 106, 246, 323; Mossley, 323; Musselburgh, 376; Neath, 177; new method of dealing with sewage, 69; new Sanitary Act, the, 160; new water schemes, 420; Newcastle-on-Tyne, 138; Newent, 177; Nuneaton, 215; Norwich, 287; Ottery St. Mary, 177; Paisley, 399; percolation of sewage, 122; pollution of rivers, 201, 402, 480; potteries, Lambeth, 268, 269; Preston, 125; purification of the Aire and Calder, 177; purification of sewage, 398, 421, 439; purification of the Thames, 215; Reading, 33, 51; Reigate, 177, 359; Retford, 69; river pollution, 177, 201, 402; Romford sewage farm, 157; Royal Commission on the Pollution of Rivers, 201, 402, 480; Royal Commission on Water Supply, 91; Roydon, 458; Rugby, 197; Sanitary Act, the new, 160; sanitary law, 247; sanitary reform, 177, 247; sanitary supervision, 233; sanitary work in Marylebone for 1869, 150: sanitary works, 246, 267; sewage contamination, 398; sewage farms, 157, 341; sewage irrigation, 33, 52, 157, 160, 177; sewage percolation, 122; sewage of Reading, 33; sewage and sanitary works, 246, 267; Sheffield, 51; Smoke Nuisance Act, 268, 269; Social Science Congress, 233, 245, 246, 247; softening water, 437; Spennymoor. 268; Stafford, 89; stinking town, a, 89; street cleansing and watering, 106; street dust, 305; Sudbury, 160; Sunderland, 268; Tain, 402. Taunton, 177; Thames sewage, 30, 33, 215; Thetford, 215, 268; Torpoint, 420; town refuse, 124; treatment of sewage, 201; Trowbridge, 106; Twickenham, 69; unhealthy foundations, 409; utilisation of sewage, 106, 142, 229, 268; village water supply, 192; Waltham Abbey, 106; water cisterns, 451; water contamination, 398; water, good, bad, and good enough, 91; water and sewage irrigation, 33; watering the streets, 106; waterworks for Bolton, new, 40; Wayoh, 40; Wells, 160, 323; Wigan, 33; Wimborne, 341; Wirksworth, 125.

Water-colour paintings, exhibition of, 361, 424
Waterloo-bridge, 288
Waterproofing stone, 440
Waterworks for Bolton, new, 40
Wattlesborough Castle 75
Wayoh waterworks, 40
Wednesbury Town-hall competition, 319, 329
Weirs on the Severn, 107
Well, artesian, 341
Wells Cathedral, 168, 394
Wellington monument, St. Paul's, 109, 121, 359
Wendling Abbey, 47
West front of Wells Cathedral, 168, 394
Western Prairie timber, 440
Weston-super-Mare School of Art, 410
Westmacott, Mr., on the education of artists, 336
Westminster subway, 49, 52
What Holland is doing for her workmen, 145; what to do with the Thames Embankment, 112
Which is the ground story? 284
Whitby, landslip at, 476
Whitchurch Market Hall competition, 305
White Colne Church, Essex, 6
Whittington Castle, 75
Whitworth Scholarships, the, 125, 197, 251
Wick, breakwater at, 107
Wiltshire Archæological Society, 102, 157, 213, 220, 230
Winchester Town-hall competition, 194
Window, Hampton Lucy, 29
Windows, the Fairford, 94
Windsor carpenters, the, 197; Windsor, Wolsey chapel, 156
Wingfield Manor, 93
Winter exhibition, Dudley Gallery, 329; winter exhibition, Society of Painters in Water-colours, 424
Wire tramways, 107
Wirksworth Town-hall competition, 265
Wolsey Chapel, Windsor, the, 156
Wolverhampton School of Art, 89
Women's costume, 236
Wood, 269; wood-carving machine, 396; wood, drying, 409; wood-dust, inflammability of, 66; wood, removing paint from, 281
Wooden railroad, a, 341
Worcester: architecture, 481; Cathedral, 248
Word for carriage painters, a, 168
Workhouses: Clitheroe, 60; Islington, 13, 234, 377
Working Men's Exhibition, the, 85, 91, 109, 193
Workmen and the Royal Academy, 107
Workmen's: dinners, 16, 52, 89, 197, 233 dwellings, 15, 34, 69, 124, 156, 337, 409 490; dwellings in Liverpool, 337; exhibitions, 111, 193
Worksop Priory Church, 388
Works: Assistant Surveyor of, 31, 34, 38, 70, 124, 163; Gothic engineering, 337; in the Isle of Man, 52; Liverpool railway, 269; by Mr. Arthur Cates, 253; sanitary, 246, 267
Writing a specification, 56
Wrought-iron cranes, 55, 74, 128

YEOVIL Dispensary competition, 320, 358, 479
York Build ing Society, 341
Yorkshhire: Archæological and Topograpical Association, 1813; rivers, pollution of, 480

ILLUSTRATIONS TO VOL. XIX.

ABBEYS: Bayham, 47; Caen, 117; Cleeve, 332; Dunfermline, 47; Eastby, 47; Gloucester, 430; Leiston, 47; St. Alban's, 62, 206; Wendling, 47
Abbeys, plans of, 47
Aldebury Priory, 65
All Saints' font, Leicester, 170
Altar, Roman Catholic Church, New York, 412
Altar window, St. Peter's, Hampton Lucy, 24
Ancona, Arch of Trajan, 225
Antwerp Cathedral, 243
Arcade details, Dunblane Cathedral 278
Arcade of nave, Worksop Priory, 390
Arch of Trajan, Ancona, 225
Architects' tombs, Roman. 153
Arrangement of stairs, 15

BATH, hot or cold, 322
Bayham and other abbeys, plans of, 47
Beauvais Cathedral, 80, 369
Brick machine, improved, 240
Brussels Cathedral, 315
BUILDING NEWS "SKETCHBOOK:"—
  Ancient cross, 116
  Cleeve Abbey, 332
  Door-hinge, Grammar School, Norwich, 485
  Doorway, St. Augustine's, Hedon, 224
  Fonts, Leicester, 170
  Gateway, St. Peter's Abbey, Gloucester, 430
  L'Abbaye aux Dames, Caen, 117
  Nave arcade, Worksop Priory, 390
  Old house at Thorpe, 135
  Priory, Old Malton, 171
  Stydd chapel, Ribchester, 484
  Tombstones from the Nunnery, Iona, 448
  Tower gateway, Leigh's Priory, Essex, 44
  West porch, St. Alban's Abbey, 206

CABINETS: old oak, 134; painted, 351
Caen, L'Abbaye aux Dames, 117
Caisson, a great, 78
Cardiff Castle tower, 431
Carving machine, wood, 390
Carvings, Gothic, 350
Cathedrals: Antwerp, 243; Beauvais, 80, 369; Brussels, 315; Dunblane, 278; Lichfield, 413; Strasburg, 260, 312
Centre group in reredos, St. Andrew's, Plaistow, 207
Chapel at Stydd, old, 484
Christ Church, Clapton, 98, 99
Church, a town, 242
Churches:—
  Clapton (Christ Church), 98, 99
  Congregational, Stamford-hill, 333
  Denton, 296
  Dunstable, 368
  Eastbourne (St. Saviour's), 45
  Haggerston (St. Chad's), 188
  Half-timbered, 296
  Hedon, 224
  Liverpool (SS. Matthew and James), 466
  Llanbadarn-fawr, 152
  Plaistow (St. Andrew's), 189, 207, 391
  Warburton, 296
  White Colne, 8
Cleeve Abbey, 332
Clock: Beauvais Cathedral, 369; Strasburg Cathedral, 312
Cold bath, 322
Compass, prismatic, 167
Congregational Church, Stamford-hill, 333
Construction of: dolphins, 40; sewers in running sand, 256
Corbels, Westholme, 25
Cornish fonts, 335
Cottage hospital, Lytham, 297
Cranes, wrought-iron, 56, 74, 75, 128
Cross, ancient, 116
Crowhurst-place, roof at, 11
Cunningham and Dabb's wood-carving machine, 396
Curves, laying out, 227, 395

DENTON Church, 296
Details: Dunblane Cathedral, 278; Westholme, Cheltenham, 25
Dolphins, 40
Door at Stydd Chapel, 484
Door-hinge, Norwich, 485
Doorways: St. Alban's Abbey, 62, 206; St. Augustine's, Hedon, 224
Drawing-board, glass, 14
Drilling machinery, portable, 96
Dunblane Cathedral, 278
Dunfermline Abbey, plan of, 47
Dunstable Priory Church, 368

EARLY Gothic stone carving, 350
Eastbonrne, St. Saviour's Church, 45
Eastby Abbey, plan of, 47
Elements of handrailing, 186, 204, 222, 258, 276, 294, 330, 348, 366, 388, 410, 428, 446, 464, 482
Essebourne Priory, 65
Etruscan ornament, 467
Examples of half-timbered churches, 296
Exterior of St. Andrew's, Plaistow, 391

FLOORS, 176, 177, 319
Fonts: Leicester (All Saints') 170; Leicester (St. Mary's) 170; Llandewednack, 335; Stydd Chapel, 484
Free Library, Salford, 449
Furniture, window, 314

GALLOWHILL Mansion, 279
Gateways: Cleeve Abbey, 332; Leigh's Priory, 44; St. Peter's Abbey, Gloucester, 430
Glass drawing-board, 14
Gloucester, gateway at, 430
Gothic stone carvings, 350
Gradient, self-working, 142, 176
Grammar School door-hinge, Norwich, 485
Great: caisson, 78; clock for Beauvais Cathedral, 369; clock at Strasburg, 312
Greek ornament, 467
Greengate Branch Free Library, 449
Group in reredos, St. Andrew's, Plaistow, 207
Guglielmo da Castelbarco, tomb of, 63

HAGGERSTON, St. Chad's Church, 188
Half-timbered churches, 296
Hall roof, Crowhurst-place, 11
Handrailing, elements of, 186, 204, 222, 258, 276, 294, 330, 348, 366, 388, 410, 428, 446, 464, 482
Hedon Church doorway. 224
Hinges: door at Norwich, 485; Mediæval, 444
Hilly ground, measuring, 176
Hospital, Lytham, 297
Hot or cold bath, 322
Hotel de Ville, Rouen, window, 315
House at Thorpe, 135

IMPROVED brick machine. 240
Interiors: Christ Church, Clapton, 98; Lichfield Cathedral, 413; St. Andrew's, Plaistow, 189; St. Chad's, Haggerston, 188
Iona, tombstones from, 448
Iron cranes, wrought, 56, 74, 75, 128
Ironwork, Mediæval, 444

KEEPER'S Lodge, Kirtlington Park, 9

L'ABBAYE aux Dames, Caen, 177
Lateran Museum, tombs in the, 153
Launching a great caisson, 78
Laying out curves, 227, 385
Library, Salford, 449
Leicester, fonts at, 170
Leigh's Priory gateway, 44
Leiston Abbey, plan of, 50
Lichfield Cathedral, interior of, 413
Liverpool, SS. Matthew and James, 466
Llanbadarn-fawr Church, 152
Llandewednack Church, fonts at, 335
Lodge, Kirtlington Park, 9
Lytham cottage hospital, 297

MACHINERY: brickmaking, 240; drilling, 96; wood carving, 396
Making mortar, 84
Malton Priory, 171
Mansion, Gallowhill, 279
Measuring hilly ground, 176
Mediæval ironwork, 444
Mid-London-road, proposed, 6
Monumental clock for Beauvais Cathedral, 369
Mortar-making, 84

NAVE arcade, Worksop Priory, 390
Newark Priory, 65
New: elements of handrailing, 186, 204, 222, 258, 276, 294, 330, 348, 366, 388, 410, 428, 446, 464, 482; mid-London-road, plan of, 6; New York, altar at, 412
North-east view of St. Saviour's, Eastbourne, 45
Norwich, door hinge at, 485
Nunnery, Iona, tombstones from, 448

OAK cabinet, old, 134
Old: house at Thorpe, 135; Malton Priory, 171; oak cabinet, 134
Ornament, Greek and Etruscan, 467

PAINTED cabinet, 351
Parish church of Llanbadarn-fawr, 152
Plaistow, St. Andrew's Church, 189, 207, 391
Plans:—
  Abbeys, 47
  Congregational Church, Stamford Hill, 333
  Essebourne Priory, 65
  Gallowhill Mansion, 279
  Keeper's lodge, Kirtlington Park, 9
  Leigh's Priory gateway, 44
  Mid-London, road, 6
  Newark Priory, 65
  Stairs, 15
  Strasburg Cathedral, 260
  Stydd Chapel, 484
  St. Andrew's, Plaistow, 391
  Town churches, 242
Porch, St. Alban's Abbey, 206
Portable drilling machinery, 96
Priory, Old Malton, 171
Priory churches: Dunstable, 368; Work sop, 390
Priory gateway, Leigh's, 44
Prismatic compass, 167
Proposed Mid-London-road, 6

REREDOS, St. Andrew's, Plaistow, 207
Residence, Westholme, 25
Retaining wall, 141
Ribchester, Stydd Chapel, 484
Road and railway, proposed Mid-London, 6
Roman architects' tombs, 153
Roof, Crowhurst-place, 11
Rouen, Hotel de Ville window, 314
Running sand, sewers in, 256

SALFORD Free Library, 449
Sculptures from Roman tombs, 153
Self-working gradient, 142, 176
Sewers in runing sand, 256
Sketchbook (see BUILDING NEWS "Sketchbook")
South-west view of Christ Church, Clapton, 99
Stained glass window, Hampton Lucy, 24
Stair planning, 15
Staircase corbels, 25
Stamford Hill Congregational Church, 333
Stone carvings, Gothic, 350
Strasburg Cathedral, 260, 312
Stydd Chapel, Ribchester, 484
St. Alban's Abbey, doorways, 62, 206
Suggestions for a town church, 242

THORPE, house at, 135
Tombs: Gugliemo da Castelbarco's, 63; Lateran Museum, Rome, 153
Tombstones, Iona, 448
Tower, Cardiff Castle, 431
Tower gateway, Leigh's Priory, 44
Town church, a, 242,
Trajan's Arch, Ancona, 225

UNITED States' brick machine, 240

VERONA, tomb at, 63

WALL, retaining, 141
Warburton Church, 296
Wendling Abbey, plan of, 47
West porch, St. Alban's Abbey, 206
West view of Trajan's Arch, Ancona, 225
Westholme, Cheltenham, details at, 25
White Colne Church, 8
Window furniture, Hotel de Ville, Rouen, 314
Window, St. Peter's, Hampton Lucy, 24
Wood-carving machine, 396
Worksop Priory, 390
Wrought-iron cranes, 56, 74, 75, 128

THE BUILDING NEWS

AND ENGINEERING JOURNAL.

NATIONAL COMPETITION DRAWINGS, SOUTH KENSINGTON.

TO have brought under our notice the results of a nation's activity in any branch of industry or in any acquirement, displayed in such a way as to give us an opportunity of judging of its merits and defects, its weakness or its strength, must surely be a matter of interest to everyone who pays attention to what is going on around him. The annual art competition at South Kensington has peculiar claims upon our attention, not only in this respect, but because we have here the means of examining and comparing, from year to year, the progress and development of an uniform system of education, comprehensive in its character and national in its distribution and operation. Probably there is no other country in which such a gathering as this takes place, or in which such an opportunity is afforded of studying the working of a national scheme of education. Those who have watched the School of Art movement from its origin, 33 years ago, at Somerset House, as the School of Design, down to the present time, must have been struck with the facility with which the first idea of training up a small number of men as designers for our native manufactures has been merged into the more catholic aim of providing a certain amount of art tuition for all. Government art-teaching is now, in fact, provided at the most moderate sum, not only for the children of our national schools, but also for those of the wealthiest classes, and to all of them alike is annually offered a long series of medals and prizes.

Before proceeding to notice this year's competition in detail, we must protest against the arrangement of the drawings. The revolving frames, though they provide us doubtless with a very clever and successful method of economising space, are anything but suitable for such an exhibition as this. It is of paramount importance, for purposes of study and comparison, that the works should be so set out that each class or stage may be separately and minutely examined and referred to. Now with the present plan this is all but impossible, and in order to find out the premiated work in the Antique, we had to turn over about 20 frames, at the risk, as it was, of missing the drawing we were in search of. We may suggest, even now, that it would be as well to remove the gold medal works, and to assign to them a more prominent position, say on a screen by themselves.

The prizes at the disposal of the examiners were 10 gold, 20 silver, and 50 bronze medals, and such minor prizes of books as might be called for by excellence of the works submitted. Of the ten gold medals, eight only have been awarded, three of which fall to the Central School at Kensington. To Mr. T. M. Rooke is due the honour of gaining this year the gold medal for the Antique, for a very clever and careful drawing of the Laocoon. He has made considerable use of the stump, and avoided entirely the mannerism in his shading which has been of late years rather the fault of the chalk drawings in this stage. Four silver medals have been awarded for drawings from the Antique to Messrs. J. Blair, Edinburgh, and C. H. Macpherson and Miss F. L. Sothern, of South Kensington. Mr. Blair and Mr. Macpherson each take two silver medals, the former having gained one for a group in oil, both of the latter gentleman's awards being from the Antique. As examples of conscientious and careful drawing, the premiated works may well be studied. The head of the Laocoon forms the subject of the work both of Miss Sothern and Mr. Macpherson, while Mr. Blair's drawing is from the Cymbal Player, Mr. Macpherson's second medal being obtained for a study of the Discobolus. The gold medal in Stage 15, for painting from still life, is awarded to a charming group of fruit and china, by Mr. John Bathe, of Manchester. The Manchester School is very strong this year in this stage, a silver medal falling to Mr. J. A. Hague, and a bronze one to Mr. Somerset, the other medallists in painting being Miss. M. N. Webb, of the Bloomsbury School, and Mr. E. J. Parker, of Carlisle. No gold medals have been adjudged to the oil-paintings from the life, though there is a very creditable display of works. Miss E. Gregory obtains a silver medal for a delicate and beautifully executed head of an Italian peasant woman, and bronze medals are awarded to the female heads by Miss Kate Seymour and Mr. M. D. Webb, of the Dublin School. The sculpture and modelling are certainly below the mark, and there is a dearth of works in this stage; in fact, we are at a loss to understand, even as it is, why some of the works here have been sent forward for competition. In one corner of the room, however, is the really clever work of Mr. Tinworth, of Lambeth School, Hercules strangling Antæus, not in competition, this gentleman having gained the silver medal of the Royal Academy, and being thus rendered ineligible to compete except in the stage of Applied Design. The strong competition, after all, is as it should be in Stage 23, Applied Design, and in this stage the whole of the remaining gold medals have been awarded. It is interesting, in going over the drawings, to find how strongly local manufactures have provided subjects for the ingenuity of the designers. This, we take it, is a very healthy sign, and proves that the Schools are doing good work in educating designers, and preparing them, by a systematic course of training, for future usefulness to our manufacturers. Thus from Nottingham, the larger proportion of the designs are for lace, from Coventry, ribbons; from Birmingham, metal work and jewellery; from Coalbrookdale, encaustic tiles; from Kidderminster, carpets, &c.

We cannot do better than commence our notice of this stage with the Architectural designs, which come more specially into our province. Mr. Andrew F. Brophy, whose name we have had to notice on several former occasions, takes off the chief honours—a gold medal, for a set of drawings for a drinking fountain. It is more, we imagine, for the care and study which Mr. Brophy has bestowed upon the details and enrichments of his work than for the design itself that the medal has been awarded, the composition, as a whole, being feeble and nondescript in style. We suppose that it would be called Italian. An octagonal grey granite basin, supported by eight columns, with white marble caps and red shafts, stands upon a granite plinth, and is surmounted with a solid and rather clumsy finial, from the sides of which the water issues from four shells of the most ordinary and commonplace character. The enrichments consist of four allegorical heads above, representing the Seasons, and four typical panels of flowers and fruit below them, all to be executed in mosaics, some ornamental ironwork being introduced in the recesses between the panels and as cresting above the water jets. The whole of these decorations are very carefully drawn, and coloured on the sheet of details (where is the third sheet?) with an amount of power and vigour which must make most architectural draughtsmen envious. A silver medal has been awarded to Mr. James J. Woodsend, a builder's clerk at Nottingham, for a perspective and sectional view of a church. By removing a portion of the transept and chancel, we are presented at once with a part exterior part interior view of the building. Drawings of this character seem to us always a species of architectural gymnastics, and perhaps for this reason we are tempted to be hard upon Mr. Woodsend. It would appear, however, that only one drawing of the set has been entered for competition, and as this gives anything but a favourable notion of the design, we will not form our opinion upon it. Bronze medals have been awarded to two students of the S. Martin's School for architectural designs —to Mr. George L. Luker, for a club-house, very neatly and carefully tinted in Indian ink, and to Mr. John A. Langston, for a design for civic buildings. This latter drawing is placed too high for minute inspection, but, at any rate, ought to have been accompanied by a plan of some kind. Mr. A. Reading, of Birmingham, has received a local medal for his design for a public library and museum, very good in execution and characteristic in style. Very noticeable also are the two sheets of designs for four shopfronts by Mr. W. T. Hollands, of Lambeth. Two of these fronts present us with an attempt to adapt the old half-timbered style to our modern requirements. We fear that not only would the District Surveyor step in, but that we should find a difficulty in constructing the over-hanging upper story in the manner indicated in the section. As endeavours to improve the normal state of things, we may welcome any attempt at novelty, though we fear Mr. Hollands will have to consult the Building Act before he goes in for woodwork and gables. Mr. James Smellie, of Glasgow, has a design for a mansion house in the Castellated style, which is the very essence of feebleness. We hoped the time had gone by for country villas with windows down to the ground and upper stories loop-holed for guns, and with battlements and angle turrets *ad libitum*. We cannot say much, either, for the church by Mr. W. Lake, of Norwich. Mr. Atkinson, of Chester, sends us a very creditable design for a shopfront in the half-timbered style. With such excellent Mediæval examples around him, Mr. Atkinson should, however, have learnt to avoid the tendency to a stone treatment which is manifest in some of his canopies and pendentives. Mr. G. Wormal's drawing of a

Norman gable at Lincoln Cathedral has gained him the prize-books; the fault of his work is that the shadows are too black. Mr. A. Foster, of Lincoln, has obtained a similar reward for his interior perspectives of a church, apparently his own design. Mr. John Howitt, of Nottingham, presents us with a design for a memorial-cross, in which a belt of very ordinary arcading is made to do duty thrice over at three different levels. Perhaps the three tiers of angels in Mr. G. G. Scott's monument in Hyde-park may have been considered a sufficient precedent for this repetition of details, but the effect in Mr. Howitt's case is not successful. There is not a better drawing in the room in point of manipulative excellence than Mr. C. W. Appelgren's Restoration of the Choragic Monument of Lysicrates, beautifully drawn and delicately tinted. The Gothic villa by Mr. T. B. Horsfield, of Halifax, is Gothic only because the windows happen not to be flat-headed. The engineering drawings are few in number, and have failed to obtain any of the principal honours. We notice very careful drawings by Messrs. D. Russell, of Carlisle; C. F. Curtis, of Lincoln; Wm. H. Evans, of South Kensington; and David Cameron, of Dundee. Mr. Talbert would be flattered if he could see what an ardent admirer he has in Mr. W. F. Randall, of South Kensington, whose designs for furniture, rewarded with a bronze medal, are surely founded upon a careful study of that gentleman's work. The pianoforte on Sheet I we should have liked better had the colouring been less forcible, but the pen-and-ink drawings on Sheet II are capital, especially the smaller cabinet, which is very original and good. The design for a chancel-screen of wrought iron by Mr. J. J. Trego, of Nottingham although unrewarded, is very characteristic and well suited to the material. So also is the design for iron gates by Mr. W. W. Clausen, of South Kensington; in fact, we are surprised that so excellent a drawing has been passed over by the examiners. The sheet of enlarged detail is beautifully drawn and tinted, and the enamelled iron work is suitably and judiciously introduced. To Mr. George Clausen, of South Kensington, has fallen the gold medal for surface decoration. His sheet comprises five designs for wall decorations, drawn to various scales, the central design only, founded upon the white lily, being drawn full size. This reduction in the scale of the designs gives him an advantage over some of his competitors. The examiners must have been much puzzled in awarding the prizes for decorations in such varied subjects among such a number of competitors, many of whom are so nearly equal in merit. From Coventry we have a group of designs for watch cases, for card backs, and for ribbons, evidently, from the similarity of their motive, inspired from the same source. Are we right in conjecturing that they have been consulting Mr. Westwood's very erudite and magnificently illustrated work? For the watch-cases Mr. James Friday receives a bronze medal, for the card backs Mr. J. Frost, and for the ribbon Mr. Walter Scott, the silver medal for ribbons being awarded to some admirable designs by Mr. E. A. Buckley. The lace designs from Nottingham are this year very numerous. We find that the practice of working in body colours on tracing paper, backed with some coloured paper, is almost universal, and results in a representation of the real material so natural in many cases as quite to deceive the observer, and to lead us to think we are examining the lace itself. Mr. F. B. Heald has obtained a gold medal, and also the Mayor of Nottingham's prize for the best design, while Miss Martha Metcalf, of Bradford, and Miss Agnes Schenk, of Lambeth, have each of them been rewarded with gold medals for designs for this material. Miss Metcalf's drawing, founded upon a very naturalistic treatment of the Dielytra Spectabilis, is especially elegant and pleasing. Messrs. G. F. Turton, G. Broadhead, and A. Read, of Nottingham, Miss M. Mansel, of Kensington, and Mr. F. Brett, of Dublin, likewise receive silver medals for designs for this fabric.* Some excellent drawings of encaustic tiles are sent up from the Coalbrookdale School. Mr. Charles Hughes takes the national prize books for a set of designs, and Mr. Charles Hinley must have run him him very close, for there is little to find fault with in his three very admirably drawn sheets, showing various arrangement of flooring tiles. The bronze medal in this class has been obtained by a student of the Lambeth School, Mr. E. Burbridge. In the same case as the drawings we have just been describing are some very fair designs for jewellery from the Birmingham School, and some elaborate lids for coal boxes or scuttles, likewise from Birmingham; one of them, the work of Mr. Alfred Taylor, is remarkable in that he has selected snow crystals for the motive of his ornament. What possible relation there can be between coal and snow we are at a loss to comprehend. From Birmingham we have also some very fair designs for ornamental metal-work, and some very poor designs for iron gates and grilles. Mr. Charles Emery has a well-studied drawing of a lectern and a candelabrum, but we give him but little praise for his gates. The set of designs for seven-light candelabra were, we presume, executed in competition for some local prizes. With the designs from Birmingham, taking them as a whole, we are anything but satisfied. The commercial flavour of that busy place seems almost to have influenced the art. In most of the designs from this school the idea seems to have been to work more for what would pay and what was suited to the trade than to try after what was good and true in art. In one word, the works are "shoppy," and this school, instead of endeavouring to raise the standard of Birmingham manufactures, has allowed itself to be dragged down and degraded to their level. This is a very bad track for a School of Art to get into, and is an abuse of art training which deserves the most severe censure. We sincerely hope that another year this tendency will be avoided. Mr. W. H. East, of Sheffield, has an excellent design for a silver tankard, and Mr. W. H. Macklen, one for an épergne. The designs by Mr. John Slater, of Stoke, for dessert plates, which fill two sheets, are many of them very novel and richly coloured. It is really impossible to do justice to the very numerous and varied examples in this stage, and we are compelled to pass over many meritorious works. There is as strong a competition as usual for the prizes offered by the Plasterers' Company. The numerous models are exhibited in the galleries south of the Horticultural Gardens. Mr. E. Foot, of Bristol, has an elaborate design for ceiling, and Mr. H. Higgins, of Glasgow, sends a scheme for the decoration of the side of a room. Mr. Foot's work is too gaily coloured, and the scale of the ornament and the panelling, out of keeping. To encourage the study of ornament the Department offers prizes for a sheet treating ornament historically, that is selecting characteristic fragments of the work of different styles and countries, and arranging them in their proper order and succession. Of course Mr. Owen Jones is largely drawn upon for this subject, and we come across a great many familiar details of his Egyptian and Assyrian styles. This kind of work appears to us to be a great waste of labour, and to be a good chance thrown away, for if the student were to study ornament for himself from buildings or works in his own neighbourhood he would do himself far more good than cribbing from a splendid collection like that by Mr. Owen Jones.

The ladies have it all their own way in the flower painting, and very beautiful indeed the works in this class are. The lovely and sweet-scented golden lily forms the subject of Miss A. A. Locke's bronze medal drawing, and similar rewards have been gained by Miss Jessie Field, of Oxford, and Miss C. N. Hill, of Edinburgh. The silver medal has been awarded to Miss F. Seymour, of Dublin, for a lovely watercolour group of wild flowers. Some orchids, by Miss Darling, of Manchester, though exquisitely drawn, have failed to obtain a reward. For drawings from prescribed examples, and for shaded drawings from the cast, several silver and bronze medals have been obtained. Noticeable here are the works of Messrs. R. Thomas, of Oxford, and G. C. Perkins, of Manchester, and a beautifully-drawn spandrel in sepia, by Miss Floyd.

We have thus endeavoured to give some idea of the nature of the exhibition, and to point out a few of the specially deserving works, though we fear we have left many first-rate drawings unnoticed. We began by protesting against the arrangement of the frames. At the risk of being thought ungracious, we must terminate by expressing our surprise at the choice of a gallery in which to place them. Surely the South Kensington authorities must have been at their very wits' end for space before they appropriated the room in which are hung the noble cartoons of Raphael to a collection, however excellent, of mere students' drawings. What a strange paradox to think that the cartoons should ever come to this—the noblest works Art has ever produced frowning down upon the school-work of Great Britain in this year of grace, 1870! Frowning, we say, for the wall space is actually partly taken up with the drawings, and it is impossible to see the cartoons properly on account of the great frames and cases. Surely, if nothing else shows how badly new buildings are wanted at South Kensington, a glance at the dishonoured cartoons would do more than hundreds of official complaints about overcrowding,

We may state, in conclusion, that the number of works sent up this year to be examined was 87,000. The preliminary selection was made by Messrs. S. Hart, R.A., F. B. Barwell, and Eyre Crowe; while the medals were awarded by Messrs. J. C. Horsley, R.A.; R. Redgrave, R.A.; R. Westmacott, R.A.; C. W. Cope, R.A.; E. J. Poynter, R.A.; and H. A. Bowler, Official Inspector; and for the architecture by Sir M. Digby Wyatt and Mr. Fergusson.

◆

THE ARCHITECTURAL EXHIBITION.

(Concluding Notice.)

We have kept our *bonne bouche* of this Exhibition to the last, and cannot take leave of it without noticing the designs for decorations, which form one of its most interesting and valuable features. In this department of decoration we are greatly indebted to Mr. S. Aitchison, who is the contributor of several drawings full of thought, novelty and refinement. We miss in them any decided characteristic style, but they may generally be described as a free treatment of Classic. No. 117, however, necessarily is otherwise, being a design for filling-in with coloured glass some Arab windows belonging to F. Leighton, Esq., R.A These are of a perforated description of slab, the holes arranged so as to form a representation of a flower vase and flowers, surmounted by Arabic writing. A sparkling and brilliant effect is thus produced, which Mr. Aitchison has enhanced by the manner in which he has varied the tints of each petal, while keeping to one colour for each flower. No. 118 is entitled, Decoration of Hall in Mansion at Kensington, for F. Leighton, Esq., R.A. A dado as high as the doorway, the cornices being continuous, with a range of square panels at the top, and long narrow ones below, is carried round the hall, and appears to be of ebonised wood, with sunk circular holes, coloured red in the frieze. Some arabesques of a slightly more lively character are cut into the doorway architrave as embellishments, but, as such, they are of a mild type. The upper part of the wall above the dado is covered with blue ornaments on white ground, executed in tilework brought, we believe, from the East by Mr. Leighton. As such, and valued relics, Mr. Aitchison's treatment of his accessories is commendably self-sacrificial; a strip of orange plain tiles at the angles is rather a startling contrast to the rest. Nos. 121, 122, 123, and 124 are designs by the same architect for pieces of furniture, most of them intended for the Thames Conservancy Board-room, in ebony, enriched with delicate mouldings and inlays of ivory or gilt lines; they are refined, with the exception of the chair, which is of a different and more clumsy type. The features are Classic or Renaissance. No. 116 is a work of a very different character, a startling sketch cartoon for staircase, Tempsford, by J. Moyr Smith. It illustrates Hugh de Payen and Geoffrey D'Adhemar founding the order of the Knights Templars under the patronage of Warmond, Patriarch of Jerusalem, A.D. 1118. Its contemplation has left upon us a vivid recollection of some violently blue legs, belonging to whom we could not aver. The two heroes seem maudlingly drunk, and the Patriarch mildly shocked at so unbecoming a proceeding; he is shaking his head, as if under the melancholy conviction that no good can come out of it, despite the frantic exertions of two acolytes, who look as if they would strain all their sinews in the efforts to swing their censers sufficiently for the occasion. The intention of the work is higher than its execution. No. 131, Sketches for Pottery and Wall Decoration—the Signs of the Zodiac—by the same, is better, as being less pretentious, and really humorous and comic, yet it is questionable if such broad farce is suitable for permanent decoration. The run of fashion, however, is very amusing. Mr. Herbert A. Gribble has an elaborate drawing, No. 119, Design for Bookcase and Decoration of Library, not without merit as a drawing and in some of the details, such as the wall decorations, but the bookcases are fussy and overdone. No. 120, Design for Organ Front, Melbourne, by Mr. Daniel Ruddle, we should have passed but that we regret to see it is said to be in course of actual execution. In No. 130 Mr. H. S. Marks gives us five exquisite bookplates, in which humour and high artistic qualities are combined. Mr. J. D. Crace sends a number of valuable sketches and studies of ancient decorations made abroad. No. 126 is from a ceiling by Ghirlandajo at Florence, from the Capella di S. Bernardo, Pal. Vecchio. The effect is produced by a gold ground, enriched by delicate painting, and contrasted by lines of deep blue in the mouldings surrounding the panels. We should like to know if the original work has the blue so strong an ultramarine. Nos. 133, 4, 5, 6, 7, and 8 are interesting studies of Eastern decorative inlaid and painted work at Damascus and Cairo, by the same hand. They bear the evidence of care and truth, and the colours are as remarkable for their delicacy as the designs for their intricacy. Nos. 138, 9, and 140 are equally interesting and careful studies of the same class in a still more remote field—that of India—by Mr. Emerson. He gives us therein a clear notion of the detail and effect of the wondrous floral inlays of the Taj Mahal. No. 132 is an important drawing by Mr. J. L. Pearson, showing his design for proposed sculpure and incised decoration of the narthex of S. Peter's Church, Vauxhall. Mr. Pearson deserves all credit for the endeavour to introduce art of such character amid plain brickwork, and the suggestions for the designs are good, but they would need to be entrusted to able hands to execute, and, indeed, to be re-cast. We cannot but question whether the incised band above the arches is not on too small a scale in itself, compared, for instance, with the bricks, which are as long as some of the figures; nor do we like the restlessness of effect produced by this band, or frieze, interfering with and interfered by the several arch and window-heads, and should have preferred a belt of sculpture carried in a line with the subjects in the three tympana of the western doorway. Drawing No. 141 is one that calls for notice; it is a part of a design for decoration of vestibule of No. 14, Fitzroy-square, the residence of Mr. Robert W. Edis, by H. S. Marks. Architecture, Painting, and Sculpture aré represented associated as three female figures in a group, and Poetry and Music but slightly separated, one on either side, with a vase holding a flowering shrub between each of these and the triple group in the midst. They each bear the insignia of their craft, and are dressed in flowing robes of sober colour, and the background is divided into four horizontal bands of quiet and retiring tints, various in width, and representing a dado against the sky. We hail this attempt at the improvement of the interior of our dwellings, both at the hands of the artist and the architect. No. 142, Sketch for Sculpture, Islip Reredos, Messrs. Slater and Carpenter, architects, exhibited by D. Bell and Almond, with Nos. 127, 8 and 9, designs for painted windows by the same artists, are in that conventional style of manufactured art which is too common. The figures look as if they would be full of affectation had they any brains for such ideas to enter, but, studied apparently from dressed dolls, we are willing to acquit them of all *malice prepense.* No. 144, Art tiles, and 145, Sketches for Glass, are exhibited under the name of G. E. Cook. We believe they are executed by him from cartoons from artists whose names should be given; they are very charming, and therefore the more reason to give full credit to whomsoever the credit of the various portions of the work is due.

---

* We are informed that the Nottingham manufacturers are very pleased with the designs, and that the best of them will all be executed.

Of another painted or inlaid panel of porcelain, No. 147, designed for the Society of Decorative Arts, by J. Moyr Smith, we are glad to be able to speak well after what we have had to say of other of that gentleman's works. It is somewhat too imitative of lead glazing, and the birds are evident copies of Japanese drawings, but it shows that Mr. Smith can do good work when he condescends to be simple, but when he will not, as in No. 148, sketch for wall decoration in flat tints, subject, Ode to Melancholy, he simply sets our teeth on edge. We turn back to No. 143, an old friend, Dromore Castle wall decoration, by E. W. Godwin, with intense satisfaction, its quiet refinement continuing to grow upon us. We feel we could live in such rooms with satisfaction. A screen in the middle of the large gallery bears six large drawings of furniture and decoration, by Owen Jones, executed by Messrs. Jackson and Graham. These are more to the present taste of the world, full, of course, of a certain facility of design and a certain harmony of effect, but yet lamentable and elaborate perpetrations of the most ordinary upholsterer's type. Nor can we even rest content with the colouring of some of the drawings, in which raspberry-jam, tinted panels surmount an orange-brown dado, and are surmounted by pink, drab, and blue in the cornice. We see here costliness without art, and deeply regret the result.

To "Works of Sculpture," by R. L. Boulton, of Cheltenham, we primarily object with reference to this name he gives them—the more modest title of woodcarver, assumed by Mr. J. Knox, who sends a figure of S. Peter, executed in wainscoat oak, is far more suitable to this class of work. When recommended to us as the meritorious attempts of working men we are disposed to criticise them leniently. It is well that our humbler carvers should strive their best to raise the tone of their work, and their ordinary foliage carving will doubtless be all the better for the practice of carving the figure occasionally; but sculpture such figures are not, and we protest against a contrary assumption, the more because we regret that many of our leading architects seem quite disposed to rest content with such carving instead of art in their works—witness the pulpit in Westminster Abbey, and the cross between puppies and lion-whelps which bark at the base of the Westminster column. If we are to have figures at all, let them have the usual number and position of the joints in the human figure, and though clothed, we seek to see that there are limbs beneath the folds of the drapery, and that the drapery falls according to the laws of nature, and that the pattern of the dress is after some conceivable model. We have yet to learn—perhaps we are inquisitive to ask—something about those of the angels about to decorate the church of Creach Grange, near Wareham, in Dorsetshire.

No. 231 is a cartoon of the Crucifixion, drawn by Mr. Ridley, for E. E. Cooke, Esq., which is effective and clever, and of a different stamp of art, far more promising for the future.

We have now completed our review of this exhibition, with the exception of two or three of the screens which contain the year's sketches of the Architectural Association Class of Design and some interesting photographs which have been sent over by some architects in France. Another screen is also creditably filled with the plates of the Architectural Association Sketch-book, of which we have previously reviewed several numbers.

THEORY OF THE ARTS.

(Continued from page 447, Vol. XVIII.*)*

ROMAN sculpture as a representative art was considerably influenced by the sensual and degrading character of the gross pantheism that prevailed. But besides this influence, there was the national taste for the baser appetites and qualities of humanity. The noble attributes so prized and encouraged by the Greeks in their public contests, and the innocent objects of rivalry of the Olympic games, ceased to have any pleasure for the cloyed Romans, satiated with warlike amusements. The sculpture naturally reflected those passions and distortions of the mind and body which express such emotions; and in the last days of the Republic the art sunk rapidly, notwithstanding the exertions of Augustus to revive it. It is well to note this retrogression in art and the causes which contributed towards it. It seems the first declension of art of which we have record; and every student of Roman history can tolerably well learn the reasons which led to it. In Greece every artist was respected; Socrates pronounced them the only wise men, and other eminent philosophers and statesmen took lessons of art and paid especial honour to artists. Their great artists were also maintained at public expense, as, for example, Polygnotus, the celebrated monumental painter. How different among the Romans! They were, among them, state tools, comparatively speaking. There was no commonwealth of genius and talent. Nor can we say even that in England such an honourable position is awarded to artists, who now frequently depend on the caprice of individuals. Under the Roman sway, there was a suspension of the better emotions and faculties of the mind, its loss of individual freedom, and its slavish subjection to state functionaries. Hence the individual was but a mere unit, existing for the State, not the State for him, as in Greece. In every respect there is a wonderful contrast between Greek and Roman tastes. Thus, in the Greek tragedy, suffering was ideal and ministrative to the soul, not, as in Rome, real torture and blood, to delight a depraved apelite. Roman literature, too, was of the same class, realistic and reflective of the loose morals and tastes of the age; the best authors were but imitators of Greek authors. Of the higher conceptive power the Romans had little or none; they were more perceptive and dictatorial by reason of the very subjection under which they existed.

All these peculiarities of physique and

mental character were reflected in the arts; thus Architecture was stern, stately, dignified, triumphant; sculpture expressed the same spirit, it gloried as being representative of victories, of exhibitions, of animal courage, suffering—brute force rather than intellectual power. Again, let us look at the efforts of the Romans to add to their predecessors' work. We find, for instance, multiplichtion instead of invention—the different orders, for example, piled one over the other; we observe, too, their modifications of the three Greek orders, the Doric, Ionic, Corinthian, and their own supplemental order, the Composite, combined of the elements of the two last. Again, in the Composite Arcade, they combined the Greek entablature and the arch. Hence their power of combination and adaptation was greater than their inventive faculties, or that nice discrimination, adjustment, and gradation of parts which we find in the construction of the Grecian temples. But their adaptation was slow in progress. In the case of the Composite Arcade, the Greek columnar trabeation was for a long time merely a mask placed in front of the arcade. In course of time the entablature yielded to the arched construction, and the first step was to cut away the intercolumnar bit of entablature, only leaving pieces over the columns for the springing of the arches. This double capital was at last superseded by springing the arches directly from the column or pier, thus, at last, arriving at the pure system of arcuation as a distinct method of construction.

Restless for conquest and dominion, the Romans devoted their best energies to military achievement and discipline, not, as with the Greeks, to the more leisurely and refined cultivation of the arts of peace. All they did was thus more to add to the stores of their predecessors, and to attain sumptuousness and splendour for their own aggrandisement, than for the sake of real improvement or for the advancement of the arts. Yet one principle, the arch, was destined to work a great change and revolution in all subsequent architecture; and this expedient they used as much from the demands of their actual requirements as from any other motive. From the Pantheon to the beautiful domed decagonal temple of Minerva Medica, we have a series of examples suggestive at least, if not the very germs, of that constructive system which was destined to change the architecture of the West and East, and give it all that flexibility and adaptation, and that mastery over mere material, and its simple static conditions which so wonderfully strike us in the structures of the Middle Ages. The vaulted basilicas of the Romans, indeed, embraced all the chief constructive points which the Gothic architects developed, though we shall mark an important change in the conceptive power or the expression of the latter's work.

In the East we find Eastern fancy, combined with the practical and regular construction of the Romans, producing quite an original style, devoid of the academic rules of Vitruvius, while in the West the tendency was to develop the most practical features, regardless of the ostentation and regularity of Roman art.

There was a mighty revolution in the modes of life, thought, and action when the dismemberment of the Empire began—a moral change which everywhere exercised a marked influence upon art conception. The dawn of Monotheism itself shed a new light which was soon felt. The world had hitherto been under the dominion of two powers—a free imagination and an unfettered intellect, sometimes in strange reconciliation, and sometimes in violent opposition. There was needed another force to balance them, to bring them to a just agreement. This was the moral power about to be inaugurated. In our next article we will show its influence upon Art, and conclude our historic sketch by a reference to modern art.

G. H. G

(*To be continued.*)

THE EXHIBITION BUILDINGS.

THE buildings in which the Exhibition of 1871 will be held have been designed by Lieut.-Col. Scott, R.E., and are to be of a permanent character. Those persons familiar with the Horticultural Gardens know the long ornamental arcades parallel with the Albert and Exhibition-roads. At the back of these arcades is a piece of waste ground, some 200ft. wide, extending to the road. On these strips of land the two main exhibition buildings are to be built. At their northern ends, these main buildings will be placed in communication with the conservatory of the Horticultural Gardens, and through it with the new Albert Hall of Arts (the grand promenade of which will be utilised for exhibition purposes, the educational collection being placed therein) by covered approaches, which are being made upon the top of the arcades connecting them with the conservatory. The southern ends of the main buildings will communicate with the permanent portion of the Exhibition building of 1862, which forms the southern boundary of the Horticultural Gardens. This building is now used for the exhibition of objects in connection with the South Kensington Museum. By this means, the building will completely surround the gardens, to which the public will be admitted at certain times, and under special conditions which have yet to be decided upon. It is also proposed to connect this series of buildings with the South Kensington Museum, by means of a covered way under the Exhibition-road, and also in the same manner with the Metropolitan Railway. Between the outer walls of each of the two exhibition buildings and the roads upon which they abut, there will still remain a long strip of waste ground, some 160ft. wide, which will allow of the buildings being laterally extended at some future time.

The length of the main buildings, on the ground floor at each side, will be 1100ft., on the upper floor at each side, 600ft. Their width throughout will be 30ft., and the height of the two floors 60ft. The level of such a length of building will be broken each side by four raised pavillions or dwarf towers; four of these on either side of the north and south extremities, will be 35ft. wide, the two centre ones being 65ft.

The ground floors of the building consist of a series of chambers, broken in equal lengths by the varying dimensions of the central portions, the light for which is obtained from large windows in the east and west sides of the respective buildings, but there can, of course, be no windows in the sides which adjoin and continue the present arcade walls.

The lower story will be set aside for the exhibition of woollen fabrics, manufactures, tools, and machinery. The upper floor will be a repetition, on a smaller scale, of the picture-gallery of the Exhibition of 1862; the galleries will have no side windows, but will be lighted with a single centre ridge glass roof. The floor will be fireproof, made on the Fox and Barret principle, of rolled iron girders filled in between with 10in. of concrete, and tiled on the upper surface. Provision is made in the built girders for heating the buildings by means of hot-water pipes, and also for ventilation. These galleries, which are to be 30ft. wide by 25ft. high, will be used exclusively for the exhibition of works of art and art-manufactures, such as painting, bronzes, sculpture porcelain, decorative furniture, jewellery; in fact, every kind of artistic work, whether applied to objects of ornament or domestic use.

On the side of the Albert and Exhibition roads, the buildings will not be excessively decorated. In the front overlooking the Horticultural Gardens, the greatest beauty of the new buildings will be seen. The arcades of the Horticultural Gardens which are only 12ft. wide, are being finished off entirely, and their massive stone capitals and cornices are being carved from designs by the South Kensington art-students. The arcades, which are at present only temporarily covered, are being roofed over in a solid and permanent manner, and will form a promenade on a level with the floor of the picture and art galleries of the upper saloons, with which they will communicate through wide doorway entrances. The side next the gardens will have a handsome terracotta balustrade, from which rise light ornamental carved wood columns, supporting a trellis-work of iron running along the whole length and breadth of the walk. This trellis-work will be interwoven with vines and creepers. The balustrade will contain vases filled with flowers, and a pleasant view will be obtained over the whole extent of the gardens beneath.

The buildings are in the Decorated Italian style, with mouldings, cornices, columns, and courses in buff-coloured terra-cotta; the brickwork being of the hard red Fareham bricks, so as to match the garden architecture, and harmonise with the new Museum buildings which are rising in front of them. The terra-cotta and red Fareham bricks are more durable against a London winter than even granite. The buildings altogether will accommodate 50,000 people.

◆

THE NEW ST. THOMAS'S HOSPITAL.

ALTHOUGH so much has been said and written with regard to Mr. Currey's new hospital at Stangate being perfect, from a sanitary point of view, in plan and arrangement, the *Medical Times and Gazette* regrets to find the communicating corridors running the whole length of the building level with the ground and first floors are not constructed for that amount of isolation it had at first supposed. Our contemporary had imagined that the corridors were the connecting links between the blocks, and that, in the event of erysipelas, fever, &c., appearing in a block, the windows and the corridors would be taken out and the passage closed, so that the only communication would be by the underground passage in the basement. This, however, is not possible, for the whole of the space between the central corridor on the ground floor and that which forms a continuous screen at the back of the first floor is filled up by rooms for the out-patients, dispensary, &c. In each case the light will be very deficient, being for the most part borrowed from the corridors between which they are situated. In the terminal blocks only, or that for the contagious diseases proper, will it be possible to isolate the wards by cutting off these channels of communication, for there are no offices fitted into the space between the corridors leading to this block.

Considerable progress has been made towards the completion of the exterior. The contractors expect to have the roofs completed and the scaffolding down by the middle of July. Two of the blocks are in this forward state now; the stonework has been washed, and they present a very imposing appearance. Up to the present time scarcely any plasterers or carpenters have been at work. Very little progress has been made in fitting up the interior; the walls are just as bare as they were twelve months ago.

According to the plans it is intended to have an open colonnade facing the river, linking together the front facets of each block, and forming the front boundary to the quadrangles. This our medical contemporary very much objects to—1st, because it shuts out some of the light and air from the wards; 2nd, because it is purely ornamental; and 3rd, because the building would be dwarfed by it. The blocks would undoubtedly look more imposing by appearing in relief. Our contemporary is also surprised to find that it is intended to "brick in" portions of the building which cannot be turned to account, and would rather have them left open as air shafts to assist in the ventilation. In some of these spaces water has been laid on, so that lavatories and water closets can be constructed, and there cannot be too many of these. Much has to be done before the building is complete, and the governors and staff may be congratulated if they get into their new building by the middle of next year.

◆

COMPETITIONS.

Bradford Church Literary Institute.—The plans prepared by Messrs. Milnes and France, Mr. W. Gay, Messrs. Andrew, Son, and Pepper, and Mr. S. Ellis, architects, Bradford, in competition for the proposed new buildings in North-parade for the above institute are now on view at the Church Institute, Albion-court, Bradford. The designs are all in the Gothic style, each differently treated. The house in Manor-row is not dealt with, the designers confining their plans to the space at the back of that edifice.

Thorngate Footbridge, Barnard Castle.—The committee for carrying out this work met last week, when the various designs submitted in competition were discussed, and, ultimately, the plan of Messrs. Nimmo and McNay, of London, was adopted, on condition that certain alterations and improvements in it can be made, and a committee was appointed to confer with the engineers on the subject.

Furniture & Decoration.

ON THE USE AND ABUSE OF ORNAMENT AND COLOUR IN THEIR APPLICATION TO HOUSE DECORATION.

(*Continued from page* 468, *Vol. XVIII.*)

A DRAWING ROOM, in the usual acceptation of the term, is substantially a lady's room. It is there she presides and reigns supreme as mistress of the mansion and queen of her company. As a rule, she fills it with articles of bijouterie and knick-knacks—articles which ladies of taste are sure to admire. Rare cabinets, beautiful and exquisite receptacles for everything and for nothing; shells, mounted in gold and ormolu, &c.; easy chairs, couches, ottomans, and every appliance for elegant comfort and cosy chat. The style of its decorations should be in accordance with its general aspect when in use—light, cheerful, and rich.

The ceiling, if it is a moderately-sized room and not enriched with ornament in relief, may be tinted cream colour. A stile may be added next to the cornice, five, six, or eight inches wide, according to the size of the room, which may be tinted of a warm grey; an ornament may be stencilled at each corner, and a smaller one in the centre of each side, between corner and corner, and connected by lines either broken and stencilled, or run continuous with a fitch or flat hoghair brush.

It is necessary to use caution in the choice and size of the ornaments used—caution as to the style, so that it may be in accordance with the architecture of the house, and as to size, so that the ornament shall not be either too large or too small for the room. Many gross mistakes are made in this respect. We often see ornaments on ceilings which are only fitted to adorn furniture, and which are utterly lost on a ceiling, and in other cases we may see ornaments put upon a ceiling ten or twelve feet high large enough for one twenty-five feet high, and of proportionate dimensions. This either proceeds from want of judgment or paucity of design, or, perhaps, what is quite as likely, from the fact that the decorator has the particular design by him ready cut, and therefore does not care to put himself to the expense and trouble of designing and cutting another. We know several cases where the decorator has a stock of stencil patterns, which he uses on all occasions, both in large and small rooms, suitable or not, and he takes care to cut new ones from them before the old ones are worn out—a profitable practice enough, but not very creditable or praiseworthy in the decorator—a practice we would wish to see abolished, as it has a downward tendency, repressing all invention and originality.

In the designing and connection of the corners and centre ornaments, care should be taken to cause the lines to flow out of the corners and form a part of them. A broad line and a fine line look better than a single line, or than two of the same width, either fine or broad. They may be either broken lines with stripes or dots, or interlace one with the other. Their colour, or the tints named above, may be, for the broad line, a dull warm gold or golden brown; the fine line may be either a tint made from vermilion and white, or a reddish mauve. The broad line should not be more than three-quarters of an inch broad on a ceiling of ordinary height, and the fine line about one-eighth. The ornaments may be done in two or three tints, as may be desirable. The larger portion, when the ornament will admit, such as a conventional leaf, may be stencilled from the top to the base with two, three, or four colours blending one into the other, or, in stencilling, the half of the leaf lengthways may be covered with a straight-edged slip of paper while one-half is coloured, then the stencilled half may be covered in the same manner, and the other half coloured, and so two shades of colour, forming light and shade, may be got on the same leaf or ornament. Many good effects may be thus got by very simple means. The cornice, whether plain mouldings or enriched, should be coloured with tints of cream colour and white on the projecting members, and tints of warm grey of different degrees of tone in the coves, quirks, and backgrounds, with suitable tints of red or pink on the under sides or fillets against the darkest grey tints. This causes the grey to look warm, and if the whole is properly balanced, the one colour will blend with the other, and the effect will be a sort of bloom of colour, equalised and toned to perfect harmony. The enrichments may be etched and gilt. A beautiful effect may be got by the judicious use of three colours of gold in conjunction with colour, namely, regular deep gold, middle shade, and lemon gold. The difference in shade of colour depends, of course, upon the amount of alloy in each—and it should be understood that the lighest colour has the most silver in it, therefore is the most likely to tarnish when exposed to contact with the atmosphere, especially on outside work, and it should therefore be well sized before being left for a finish. There is only a certain class or style of architectural ornament that will bear etching with advantage, although we see all sorts indiscriminately etched. The Corinthian capital, and many of the Greek, Italian, and Roman ornaments may be etched, but a very large proportion of architectural enrichments cannot be so treated, and it is wholly out of place on Gothic ornament. We therefore, as a rule, prefer parcel gilding, and those parts should always be selected for gilding which receive and reflect the light best; rounded projections, beads, and hollows, for instance. Flat surfaces seldom reflect the light, and when they do not the gold looks almost black. When only part of an ornament is gilt, the rest of it should be of a cream or gold colour, or other tone of yellow, as these tints blend with the gold, and we thus avoid an abrupt line.

The walls may be done in several ways: when the room is large enough, a good style is to divide each wall into proportional panels, with stiles and pilasters, and gold mouldings. The centre panel on each wall may be filled with a mirror of the same dimension, and finished in the same manner as the other panels. Much care is required in the selection of glass for this purpose, especially in cases where two glasses are exactly opposite each other; for if they are not perfectly level and equal in surface, they distort everything in the room; the cornices of the room and doorways will appear crooked, broken, and falling down, and as there is a double reflection, which causes, as it were, an endless vista of rooms, the distortion is multiplied each time, but if the mirrors are good and true, the effect produced is excellent. The panels and pilasters should be enclosed with two mouldings, or rather a mould and bead, the outside one about one inch wide, more or less, according to the size of room, either with or without corner pieces. The second or inner bead, about half an inch wide, should be placed about three or four inches apart from the outside moulding. We thus get space for three tints of colour. The panels may be of a light warm reddish grey tone; the three inches space between the mouldings may be light pink, and the style cream colour, or the pink and cream colour may be renewed. The panel colour is admirably adapted for the display of gold-framed water colours or engravings. The pilasters may be painted with arabesques of good design, on a cream colour ground. These should never be attempted except they can be well and carefully done, and they should always have a meaning. It is a senseless practice to paint a pretentious style of ornament, and when asked as to its meaning, to be told "Oh! it is an ornament, that is all!" The ornaments of a dining room should have some reference to the purpose for which it is used—fruit, game, implements of the chase, more especially of those animals which are used for food, &c. In the drawing room, we may have the seasons represented by the aid of flowers, birds, butterflies, &c. The wild flowers of the months are a very suitable decoration, unpretentious, and well adapted for arrangement. Large masses of flowers are objectionable. Coloured ornament, enclosing medallions, either of the seasons or classic heads, is also a good style. A less pretentious style of treatment is to put each wall or side of the room into one panel, with gold mouldings, as before, but in this case each panel should have a centre ornament of a proportionate size, placed exactly in the middle of the top lines of mouldings, in order to give elevation, and break the long straight line, which is always objectionable. The form of these and of the corner ornaments must be determined by the style of the room. The centre of panel may, in this case, be either tinted or filled in with a suitable diaper pattern paper. If paper is used we prefer that there should not be any of the so-called gold in the pattern, but when the gold patterns are used for this purpose they should be chosen of as quiet and undemonstrative a pattern as possible. There is a variety of drawing-room papers of recent introduction in which the gold is embossed, and, almost without exception, these patterns are of that spotty character we have before had occasion to condemn. These goods are very beautiful to look at in the piece, but there is a "dot and carry one" character about them we do not like, and after all the gold is but a delusion and a snare, for they will not stand—at all events we have not yet seen any of the gilt papers that will not tarnish, and even in the most favourable situations they will begin to fade or go black in twelve months after being hung. The colour of the stiles of the room will depend upon that of the paper of the panel. A simple and inexpensive manner of treating a drawing room is to colour the walls of some light pleasing tint in distemper, then decorate with a floral border round the top part of the wall about 6in. wide, enclosed in simple gold beads, and forming a frieze; a narrow ornamental border in one colour may also be put round the bottom of the wall about 6in. from the skirting. Many paper hangers make a practice of running borders, and even gold mouldings round the door architraves and round the chimney piece; this is a vulgar practice, something in the paper-trunk style of business, and should be avoided. Many suitable arrangements of borders are manufactured by the paper stainer, and if good taste is exercised in the choice of colour, an excellent effect may be obtained at a slight cost, and we have found in our experience that it is not always the most expensive work which looks the best.

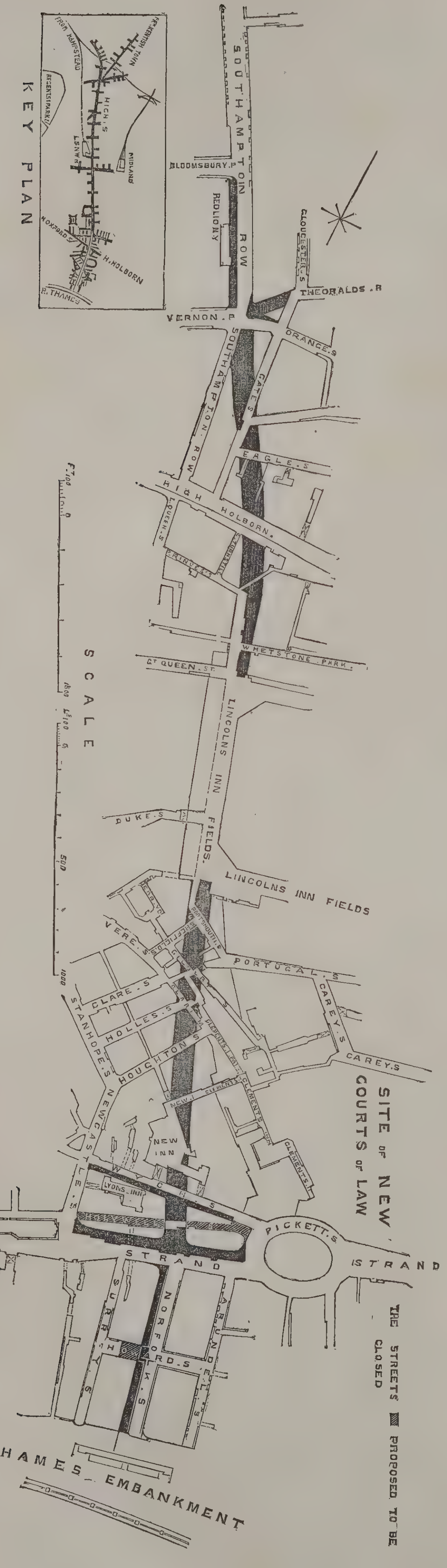
(*To be continued.*)

◆

THE PROPOSED NEW MID-LONDON ROAD AND RAILWAY.

THE means of communication between the East and West ends of London, by road and rail, are by no means inadequate or inconvenient. The two great lines of thoroughfare—Holborn and the Strand—and their continuations, and the metropolitan system of underground communication, are at present tolerably equal to the public want. With regard to the North-Western and Central portions of the metropolis, the case is altogether different. There are no good roads between the three great trunk lines of the Euston-road, Oxford-street, and Holborn, and the Strand and Fleet-street, except Portland-place and Regent-street, and Farringdon-road and street—both circuitous, and at a considerable distance from each other. Means of communication by rail are still worse. The Northern districts are practically isolated from the Southern and South-Western.

A project is now on foot, and has been submitted to the Metropolitan Board of Works, having for its object the constructing a railway extending in a north-west direction to the point where the Hampstead, Kentish Town, and Camden-roads join, connecting the North-Western Railway at Euston-square with the South-Eastern



PLAN SHOWING ROUTE OF PROPOSED NEW MID-LONDON ROAD.

at Waterloo Junction, as shown on the plan which we give. This line would pass under Southampton-row, Holborn, the west side of Lincoln's-inn-fields, Clare-market, Wych-street, Holywell-street, and the Strand, and crossing the river at the point shown by a new bridge, which need not necessarily be a standing disgrace to railway engineers, as are the Cannon-street and Charing-cross bridges. This scheme, as its promoters point out, affords a good opportunity for the Metropolitan Board of Works to co-operate with them in the construction of two short sections of road, 60ft. wide—viz., from Southampton-row through Little Turnstile, to the north-west corner of Lincoln's-inn-fields (not Lincoln's-inn-*square*, as erroneously stated by two contemporaries), and from the south-west corner of Lincoln's-inn-fields to the Strand thus affording direct communication between Hampstead, Highgate, Kentish Town, and Holloway, and the Thames Embankment. A minor, but still important, improvement might be effected at the same time by opening up a direct access to Vernon-place from Theobald's-road.

The promoters have determined to connect the new nlie with the South-Eastern, at Waterloo Junction, rather than at Charing-cross, because of the comparatively immense cost which the route to the latter station would entail; and also because of the consequent necessary widening of the Charing-cross bridge, very undesirable on many grounds The route adopted, moreover, is so direct that it is only a few chains longer than if it took its course down the Hampstead and Tottenham-court-roads, through Leicester-square, to Charing-cross. The gradients of the proposed line are of the first class, the steepest being 1 in 114, except a short rise of 1 in 40 into Euston Station—such a rise at that point being rather an advantage, than otherwise, as it will facilitate the stopping and starting of trains. Another great point is that although the line is entirely underground, no disturbance of the streets will be necessary from Euston-square to the south side of Lincoln's-inn-fields, owing to the great depth at which the railway will be constructed.

Testimony has been already borne by Mr. Layard and Mr. Street to the facilities of access to the site of the New Law Courts which such a street would afford. The gross cost of the purchase of the property necessary to be acquired for constructing the new road, from Vernon-place, Southampton-row, to the Strand, as well as the contemplated improvement at Theobald's-oad, is estimated at £500,000. The sale of surplus property would considerably reduce this sum, and the promoters of the Mid London Railway Company, offer to share with the Board, the nett cost of the new street. The proposal is one not likely to be made again, and we think the Board might fairly support the scheme, both in the interest of the general public, and of the ratepayers, at whose cost, at some time, some such road must be made.

◆

KEEPER'S LODGE AT KIRTLINGTON PARK, OXON.

One of our illustrations this week represents a keeper's lodge at Kirtlington Park, Oxon, built for Sir Henry W. Dashwood from designs supplied by Mr. William Wilkinson, architect, Oxford. The walls are of stone, and are lined inside with brick. The roof is covered with blue slates. The cost of the lodge was about £350.

◆

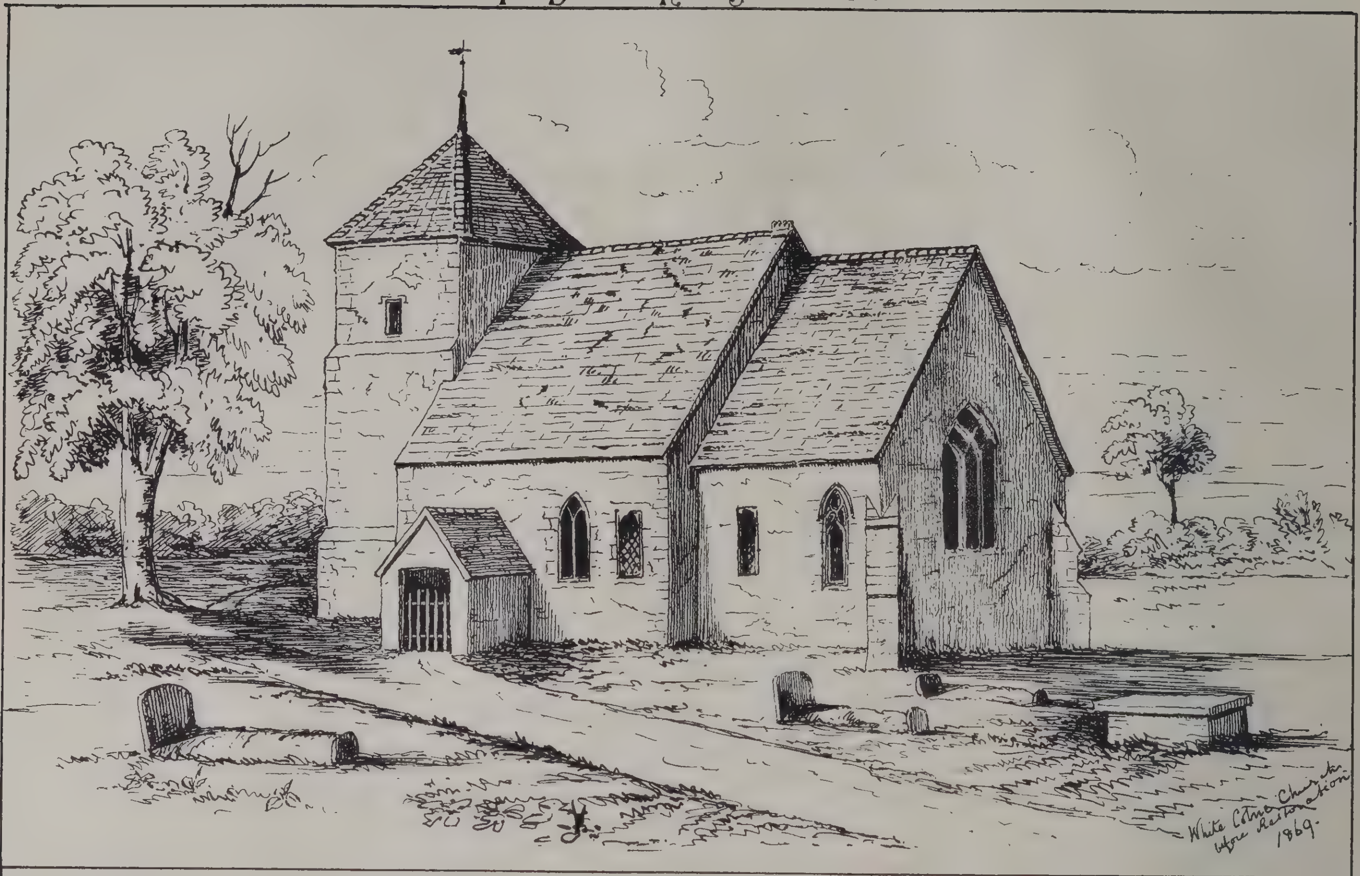
WHITE COLNE CHURCH, ESSEX,

One of our illustrations this week represents the church of St. Andrew, White Colne, Essex, before and after restoration. The walls of this church, in 1869, were entirely covered with a thick coating of plaster, all the stonework of the windows was decayed, wood mullions and tracery of the "Churchwardens' Gothic" era in one or two instances doing duty for the stone originals. In the interior, both roofs had false plaster ceilings, and whitewash reigned omnipotent everywhere. High pews and a western gallery made the small church appear still smaller and a "three-decker," with sounding board, contributed not a little to this effect. The prevailing style of this church is Late Decorated, but in removing the plastering, blocked up Norman windows, of early date, showed that the church was of still earlier foundation. The work of restoration was commenced in August last, and is now completed. The illustration suffices to show how the restoration has affected the exterior of the building; no further description, therefore, is necessary. In the interior, on the removal of the plaster ceilings, both roofs were found perfectly sound (of the trussed rafter construction), and were accordingly carefully restored. Owing to the use of a sort of soft stone called "clunch," the decay of the mullions and tracery of the windows has necessitated their being replaced with new stone in most instances, but with one exception, the new windows are exact reproductions of the old ones. A stained glass window, by Ward and Hughes, has been placed in the tower, to the memory of the former vicar, plain quarry glazing, with coloured borders, being used for the remaining windows in the church. Open seats have taken the place of the high pews. Proper choir accommodation has been provided in the chancel. The old Elizabethan pulpit has been taken down from its high pedestal, and is now fain to content itself on a more modest moulded stone base. A new font has been given by the parishioners, and Minton tiles have been laid in the nave, chancel, and tower. The work of restoration has been exceedingly well carried out by, Mr. T. Rogers, of Earls Colne, builder, under the superintendence and according to the plans of the architect, Charles J. Moxon, A.R.I.B.A., of 48, Albany-street, London.

◆

The Dome of S. Peter's.—A curious instance of the way in which observation fails to remark familiar sights has recently come to light in Rome. Everybody knows that, while the dome of S. Peter's is the work of Michael Angelo, the rest of the building is from the design of Carlo Maderno; but though thousands have gazed at at the wonderful church, it was only the other day that a French traveller observed that the middle point of the dome and that of the portico do not coincide. The difference between them is nearly 5 ft., and must, according the *Atheneum*, be due either to an original defect in construction, or to subsequent inclination of the axis of part of the building.

Stoke Newington Green.—The Parks and Open Spaces Committee of the Metropolitan Board of Works have under consideration the improvement of this green. There are many literary and historical associations connected with the place. The house in which the late Samuel Rogers, author of the "Pleasures of Memory," was born is still in existence there. It is in contemplation to erect by subscription a statue of De Foe, who was educated and afterwards resided at Newington-green.



White · Colne · Church · before · Restoration.

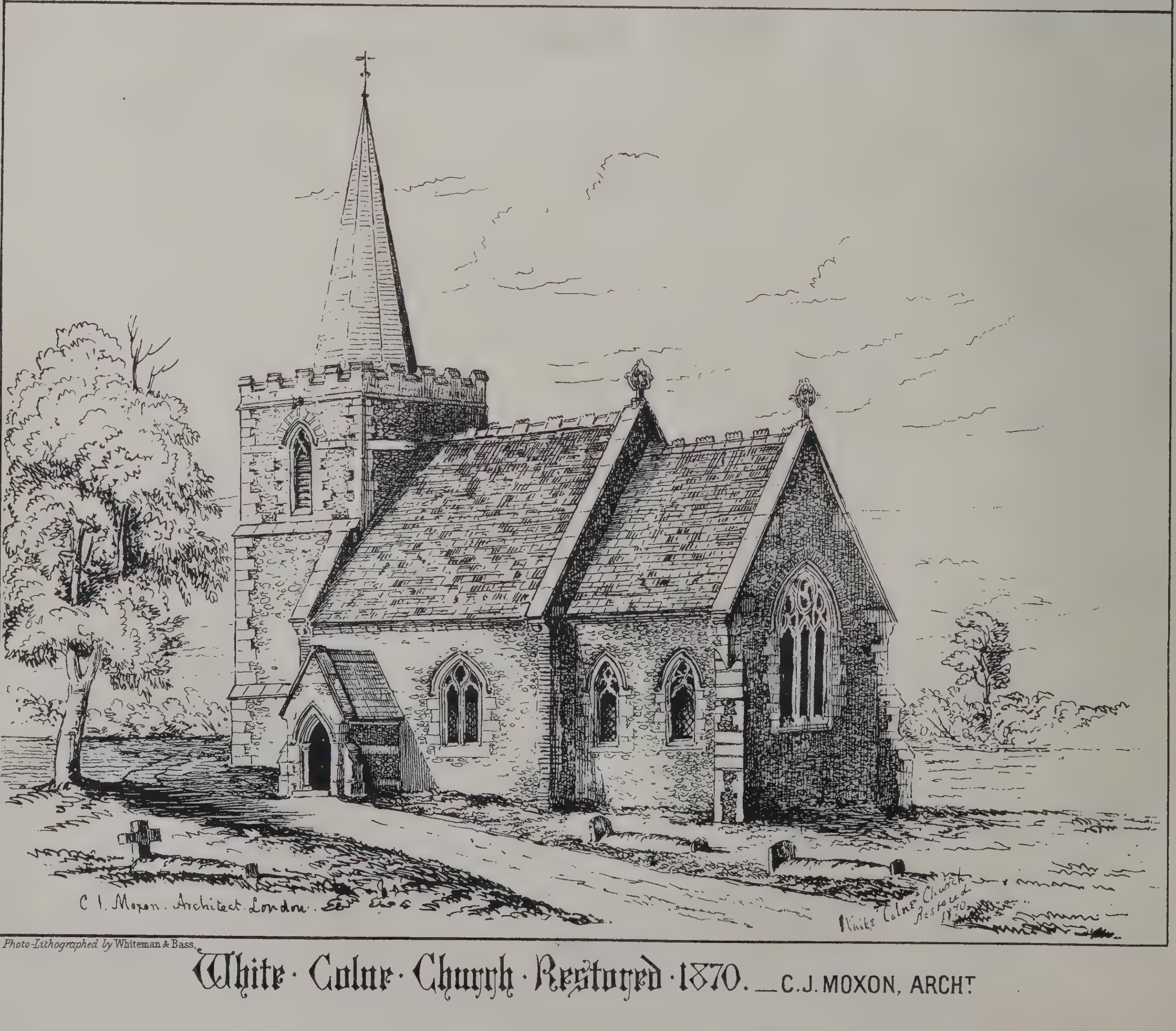
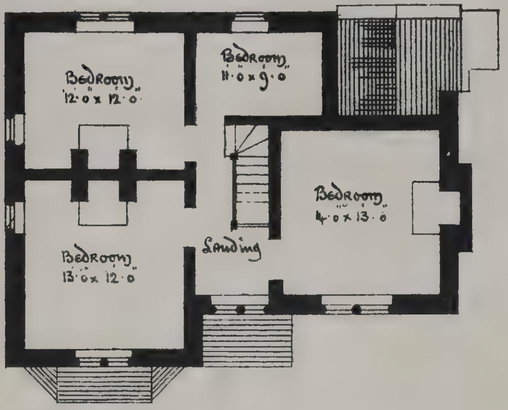
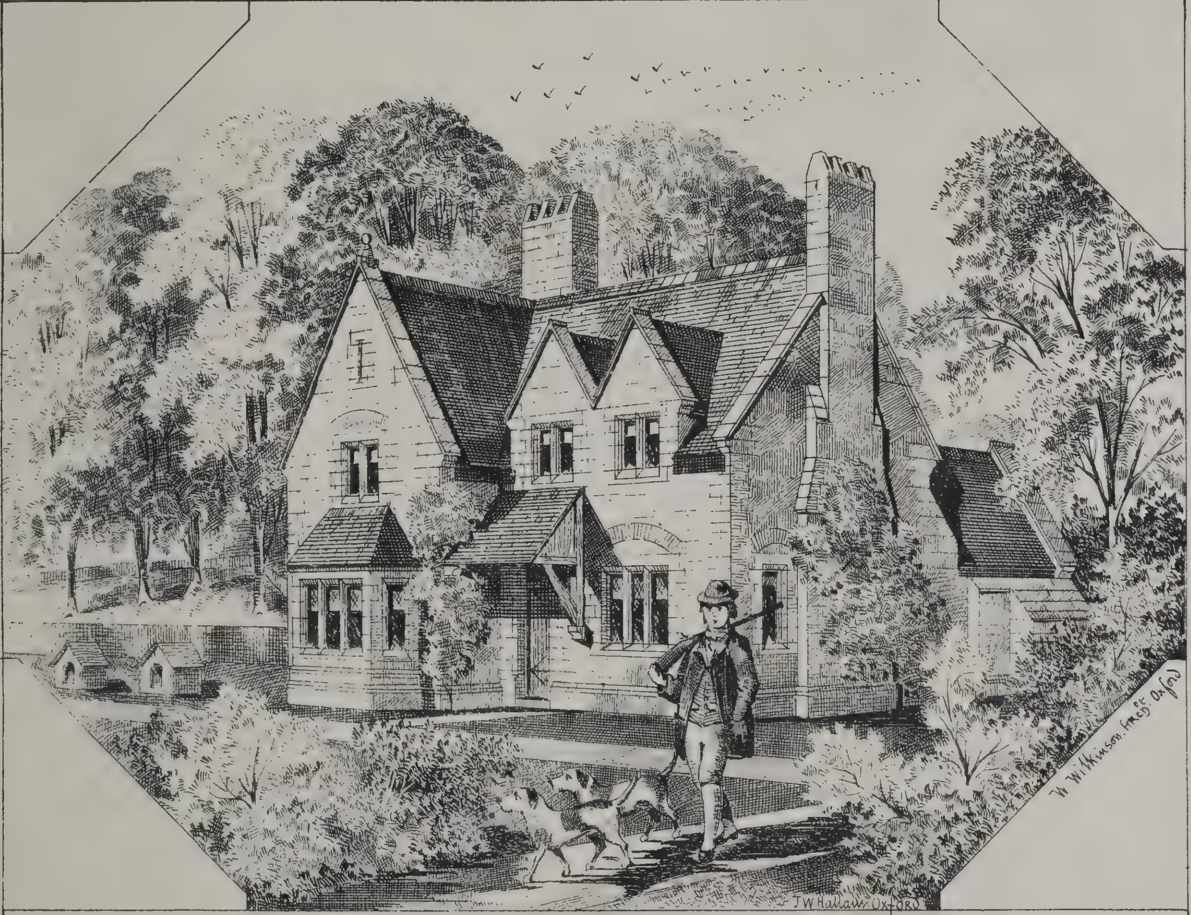


Photo-Lithographed by Whiteman & Bass.

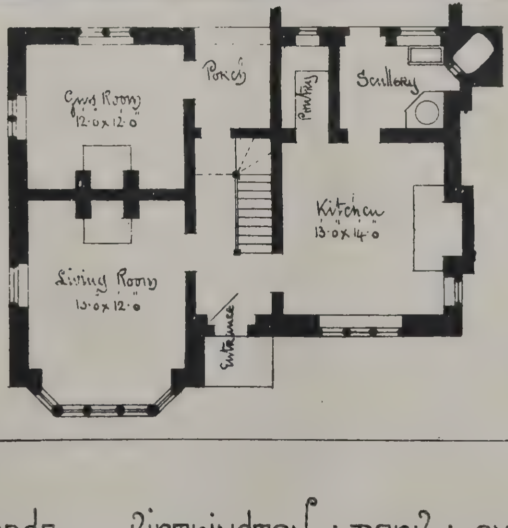
White · Colne · Church · Restored · 1870. _ C. J. MOXON, ARCHT.

BEDROOM : PLAN





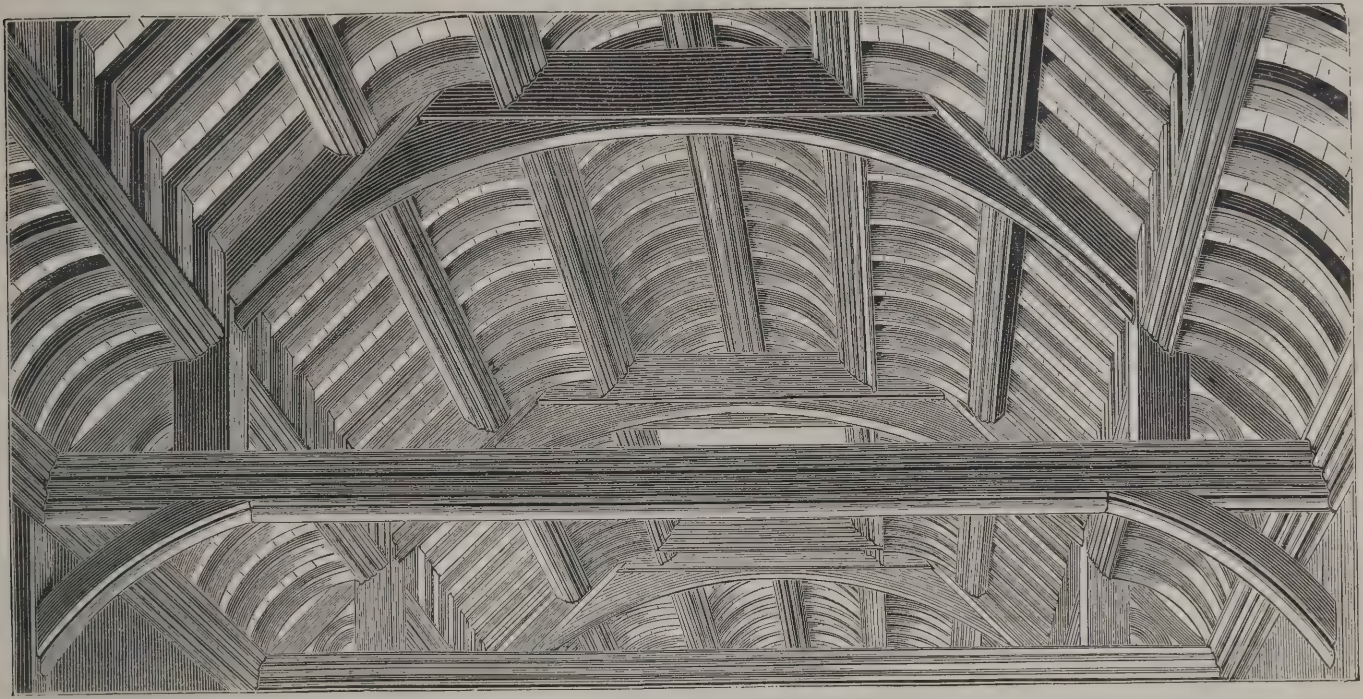
GROUND : PLAN



Scale 16 Feet to one inch.

Photo-Lithographed by Whiteman & Bass, London

KEEPER'S : LODGE AT KIRTLINGTON : PARK : OXFORDSHIRE



HALL ROOF, CROWHURST PLACE.

BRIEF CHAPTERS ON BRITISH CARPENTRY.

By Thomas Morris.

(Continued from page 478, Vol. XVIII.)

FROM a royal and stately example, highly embellished, and carrying Decorative art to a perfectly dramatic extent, a quality that was soon perceived and turned to account, though it may yet serve as a copious source of suggestion whenever a modern theatre has to be Gothically designed, we turn to a specimen of comparatively plain and humble character. Metropolitan skill and continental adaptations are exchanged for provincial simplicity and domestic forms. Yet both scenes were occasionally trodden by the same august personages.

In a quiet district on the deep clay lies the parish of Crowhurst, surrounded by Limpsfield, Oxted, Tandridge, and Lingfield. It contains the further manors of Grove and Chellows, and Newland, but the population is small and the houses few. It is unnoticed in Domesday, but formed a distinct manor in the early part of the fourteenth century, and was granted by John de Horne to the founder of the Gaynsford family, who was buried here in 1450; and whose descendants long retained the ownership. The circumstances that connect Crowhurst with royal and historic events are perfectly natural. Anne Boleyn, or, according to her own subscription, *Anna de Boullan*, sprang from a race of London merchants, of whom the first was buried in S. Lawrence Pountney. Geoffrey Boleyn, Lord Mayor in 1457, bought Blickling Hall, Norfolk, of Sir John Fastolf; and Hever Castle, Kent, of the Cobhams. Both these seats, and Rochford Hall, Essex, have been named as the birth-place of the Queen, but probability inclines to Blickling. The event would confer distinction on any place for "there is no name in the annals of female royalty," says her biographer, "over which the enchantments of poetry and romance have cast such bewildering spells." But though born elsewhere, it was at Hever Castle that Henry VIII. paid her the homage of his suit, in the happy time before contending parties became detractors, leaving no faithful representation of her moral character, as Holbein has done of her personal beauty. Taking a ride of twenty miles along—

> The rose-hung lanes of woody Kent.

the King would sound a bugle as he reached a neighbouring hill, to give notice of his approach, and the spot is fixed in local tradition. The distance from Hever to Crowhurst being about four miles, it may be assumed that their respective occupants would be on terms of neighbourly intimacy, and one incident especially supports this view. Among the ladies of Anne's retinue, was a fair young gentlewoman, Mistress Gaynsford, beloved of a noble youth, George Zouch, who snatched a book from her hands. It was a copy of Tindal's translation of the Gospels that Anne had lent her, and as it could only be recovered by the King's intervention, he had an opportunity to make an examination that is supposed to have influenced his subsequent proceedings. Crowhurst (a woodland name) lying *en route* from Eltham to Hever, it seems quite probable that the King should have been occasionally entertained here. His visits are, indeed, traditionally attested by a double hedge of yew, in the planting of which his Majesty took part. Another circumstance I may mention, though it was probably not thought of at the time, is the fact that Sir John Gaynsford had been the husband of six wives, affording a singular prefigurement of the destiny awaiting the royal guest received with so much honour and welcome. Sir John, however, had twenty children, Henry only three.

Crowhurst Place must have presented a good example of the Mediæval mansions next in scale to the castle—viz., the moated manor house. The moat and wall, indeed, are still almost entire. The house was chiefly of timber in panels, and the roofs were covered with Horsham slates. There was a room, about 14ft. square, handsomely fitted up, and ornamented with armorial bearings painted on small boards. A larger parlour was splendidly finished with a cornice of openwork, backed by a crimson ground. The ceiling consisted of fluted girders and joists, painted blue, and studded with stars of gilt metal. The entrance-porch has been removed, but the ironwork of the latch, especially a plate of perforated work, with a backing of red Morocco leather, indicates the careful treatment of detail. The Hall was the chief apartment, and though greatly disfigured and disguised by the conversion of the building into a farmhouse, is still the feature of principal interest. The original timber roof remains, and is so perfect and substantial as to be capable of enduring for centuries to come. When Mr. Railton was engaged with the erection of Lingfield Parsonage, it attracted his attention, and the accompanying illustration is based on the accurate particulars he obtained. As the inclosing walls were of timber, and incapable of resisting by mere weight the lateral thrust of a roof, while such expedients as we have seen at Nursted Court* would have curtailed the floor space to an inconvenient degree, the safest, and, perhaps, on the balance of evils, the least artistically objectionable mode was adopted—namely, the introduction of a cross girder. Under somewhat similar circumstances, in the chapel of Croydon Palace (page 285, Vol. XVIII.), a decorative arch was formed under the girder and the upper part of the roof shut off by a ceiling, but at Crowhurst so great a sacrifice was inadmissible, and the cradle roof was determined on. Upon the wall-posts of the opposite sides is laid the strong cross girder, as something to build upon. At the greatest convenient distance from the centre, queen-posts are erected, and their pressure on the girder is relieved by curved struts reaching some way down the wall-posts. Principal rafters incline from the walls towards the centre, resting on the tops of the queens, but are only about two-thirds of the length that would reach the apex of the roof, being stopped at that point by a level strut, under which is a connecting arch. From principal to principal extend massive purlins supporting the stout rafters, which are partly straight and partly curved, a mixture that gives considerable intricacy and richness to the work, without impairing its character as a piece of open carpentry.

Imitation is the strongest proof of admiration. The grand original in Westminster Hall was repeated at Beddington and at Lambeth. Crosby Hall and Christ Church have been renewed in recent examples, and in the booking-office of the Midland Railway, St. Pancras, Mr. G. G. Scott has freely imitated some leading lines of Crowhurst. In the days of its perfection, when furnished with appointments of country state—heraldic emblazonments, stags' antlers, hunting-horns, dog couples, and instruments for the chase, besides weapons and armour of more serious import, the hall must have had a striking effect, but the habits which had called such apartments into existence were in the last stage of transition. The custom of dining here began to decline in the fourteenth century, and was far less generally observed in the sixteenth. In the ordinances of Eltham, A.D. 1526, it is stated that "sundrie noblemen and gentlemen and others doe muche delighte and use to dyne in corners and secret places, not repayring to the Kinge's chamber or hall."

---

* Sutton Courtenay Berks, may be also referred to

The Surveyor-General of Henry VIII. notes repairs to the "Kynge's dynyng chamber and the Queny's dynyng chamber," at the manor of Greenwich. Part of the hall was occasionally screened off for a dining room, or, its lofty proportions ceasing, a room was built above, and the upper classes at length entirely relinquished the ancient usage of dining with their retainers. Effectual State provisions for general domestic safety rendered the great hall of old times unnecessary, and its disuse closed one chief opening for artistic carpentry. But we have a splendid series of originals that ought to be preserved with no less care than would be bestowed on pictures by Raphael or Titian." Our national pre-eminence in carpentry has been too long disregarded, and works whose interest will grow with time, are consequently permitted to disappear. "In short," says Mr. Street, "just as we must give the palm to other countries when we examine the history of groined roofs executed in stone, so it is certain that we have had no worthy competitors in the science of building and ornamenting timber roofs." Roofs do not, indeed, exhaust the subject, but constitute a very important section of British carpentry.

After an interval rendered necessary by engagements, I propose to resume these chapters.

◆

SCIENCE IN ARCHITECTURE.

By Wm. Parslow.*

An architect's specification is a good illustration of what constitutes Science in Architecture. In this paper I purpose dealing with some of the points that the carrying out of a specification suggests.

Foundations, Drains, and Brickwork.

The best foundation, as a general rule, is growing sand, and the least number of settlements are usually observed to buildings upon this foundation. Rock, known to be solid, is equally good, but rock is often treacherous, such, for instance, as may be found about Litherland. Most of the houses in Litherland Park are upon rock, and they have given seriously. Faults in the rock, holes, loose strata, or soft stone underneath may give, and if the rock does give, from any cause, the building receives a shock resulting in the usual defects of serious settlements. Growing sand will not give in this way; it has often a tendency to expand rather than to sink, and if it gives it does so but little, and that evenly, and does not hurt the structure upon it.

For the same reasons that make rock doubtful as a foundation, clay is more so; there may be, though hidden, what are technically termed ravines, or other holes in the clay; these cause the structure to slip. If a solid bed can be assured, the architect may determine upon building without fear, but this is often impracticable. A thin bed of clay with rock underneath is a very treacherous foundation; the clay is almost sure to move, and should be therefore excavated. Cracks in buildings do not always arise from settlements in the foundation, or defective work. All buildings have a tendency to settle and contract as the materials with which they have been built become dry. Brickwork, for instance, must contract and settle to some extent, and stone put into a building fresh from the quarry is more or less wet, and will shrink in some degree while drying. This accounts for the open joints sometimes visible in new buildings; these cannot be altogether avoided; better that this appearance, which can be easily set right, should exist, than the stone be made so tight that it will snap when contraction begins and the materials dry. We require cills and steps to be bedded hollow for this reason, to provide for the results of contraction.

Drainage.

Drains, where there is not much fall, are best of brick or of unglazed tiles; the idea that glazing improves drain tiles for all purposes is not correct. It was at first thought that the invention would cause the soil to pass easily through, but instead of that, experience proves that in flat drainage the soil clings to the glazing far more tenaciously than to the unglazed material. It may be accounted for in this way; the glazing keeps the sides of the drain pipes very dry; they are so impervious that water cannot be communicated from the outside; and soil will cling to the dry article while it will fall from the wet one, or be easily removed by a slight flushing of the pipe. Unglazed pipes are generally wet when in use, because moisture from the outside earth soaks into them, and the moist surface thus presented to the soil keeps the whole in a favourable state for the removal of the soil when a slight flushing takes place. Brick drains are for the same reason much better than glazed stone ware. I have known 6in. drain tiles taken up in the neighbourhood of Liverpool, after having been laid but a year or two, and soil 2in. thick has been clinging to the sides all round, fast, like mortar, leaving but 2in. for water and other drainage to flow through; such pipes must evidently soon become choked up. This instance occurred where the ground was flat. Brick or unglazed pipes should be used in such cases. Where there is a good fall glazed pipes may be used, as they are more durable. Within the last few years we have known drains laid about Liverpool of 18in. glazed pipes where there has not been much fall, and where the drains have often run 18ft. below the ground level; these, it seems to me, are liable soon to choke from the cause named, and then how are they to be cleaned? Flushing will not take the soil off; it clings so fast to the smooth surface that forcible pressure is necessary, and at such a depth it is not safe for men to go down 18in. pipes. A good brick drain would cost very little more, and would answer better in every way. In such rocky ground as is to be found about Liverpool a cheaper drain than the glazed pipe might often be obtained by cutting an opening in the rock and covering it with flags, and this would answer every purpose.

If drains are laid in running sand, it is better to set them in cement, then cover the joints with clay, as the sand will otherwise find its way into the drains before the cement is dry, and choke the pipes; by covering this cement with clay, the latter, which will not at once let the water soak through, becomes a covering to the cement long enough to let it harden, and though the clay will in time be washed away, it will then have done its work.

In ordinary foundations, as generally understood, clay only is the best bedding for drains; there is no fear of the earth or growing sand getting into the pipes, and the clay allows them to yield to a pressure which might break them if set in cement; of course, the danger of the pipes breaking, in case of an uneven pressure, when they are set with cement in running sand, still remains, but this is the less evil of the two, and must be borne.

Mortar.

Mortar is better old than quite new; it is a mistake to specify,—"only new mortar is to be used." It is with mortar as with clay for bricks, if clay is used for bricks after having been tempered but a short time, the result is apparent in inferior bricks; they are brittle, and will not stand fire or weather, but if the clay is allowed to lie a long time it consolidates, works together, bonds, and makes tougher and more durable bricks; so if mortar is used while fresh, it is brittle, technically—short, the particles do not bind; but if allowed to stand for some days, the particles work well into one another, the whole becomes tough and clammy; a great essential. When we try mortar, as architects, we like to feel it tough and clammy, but we cannot obtain this so well if we require it fresh. The difference between modern and ancient usage may account for our modern mortar not being so good as that of the ancients: Our mortar is now, as a rule, used fresh; in olden times it was frequently buried for twelve months before using. Mortar, though not used fresh, should be protected, according to the weather, and be kept moist; it is injured if allowed to become so dry as to require remixing.

It seems to me a belief is current that mill-made mortar is necessarily better than hand made. I cannot agree with this notion. We were told last meeting that in the building of concrete houses fine sand separates from the cement, does not bind, and that coarser material is better. We all know this to be the case with cement work, hence we specify gravel; for the same reason sand in mortar will not bind so well with the lime if ground fine in a mill, but it is better for being coarse, while the bonding of the separate ingredients accomplished by the mill is, in hand-made mortar, better secured by capillary attraction when allowed to lie unused for a few days. The ancients or mediæval builders, it is evident, did not use any mortar to correspond with our mill-made; if old buildings are examined, it will be found large particles of the ingredients still exist in the mortar, showing material very much like gravel has been mixed with the lime. Another reason why mill-made mortar does not in practice prove so good as hand-made is, the men at the pug mill will, however they are cautioned, throw in soft broken bricks and other refuse to grind up with the sand, and this refuse will not adhere so well to the lime as sharp sand or gravel. If men merely screen the sand for mortar they cannot adopt this practice. Mortar for pointing is now sometimes buried from force of circumstances: If too much is made the builder buries it, and never finds it worse for such treatment. Mortar for pointing should not have much burnt marble in it, as the burning of the marble destroys its nature. Ground refuse from glass works is now very frequently used for pointing, and with great success.

Smoky Chimneys.

It would be out of place here to attempt to deal with this evil in detail. I will simply allude to one principle only, apart from defective building, and the numerous inventions as remedies. It will invariably be found that chimneys have a tendency to smoke when at the side of a house where no building the same height adjoins. The space at the side of the house being sheltered, forms a vacuum, and as wind passes over the building, it has a tendency to fall down and fill up this vacuum, and in so doing it rushes down the chimneys at that end of the house. This explains why such chimneys smoke during particular winds only. They do not smoke when the wind blows directly against them, but when it comes from an opposite quarter passing over the roof of the house. This, of course, suggests the necessity of making special preparations for all chimneys in such positions. A good curve to the flue will often prove sufficient. Chimneys smoke worse in Gothic houses, because the vacuums created are more numerous. In flat roofed houses, if the chimneys are in the middle of the roof there is not much fear of them smoking.

Masonry.

The frequent failures in the use of Bath stone in and near Liverpool; the utter want, as it has appeared to me, of its adaptability to our clime, has often attracted my attention, and I have tried to find out the reason why a stone of such pleasing appearance and so useful in working could not be more generally used by us. When in Bath, a short time ago, I had an opportunity of paying attention to the subject. I soon came to the conclusion that the cause of failures in the use of this stone in Liverpool exists mainly in applying to the wrong quarries for stone for outside purposes.

If we require a good stone for outside purposes, we should specify "Box Ground," or the "Combe Down" stone. These are the most durable; they work freely, and the former is considered equal to Portland stone in durability, while much cheaper. The Combe Down stone was used in the building of Bath Abbey; nearly 300 years have elapsed since this abbey was restored, and yet many of the mouldings are still perfect. The Combe Down stone is not equal, on the whole, to the Box Ground; for outside purposes it requires to be selected, but when selected gives great satisfaction; the blocks are not so large as those of the Box Ground; its texture is hard and coarse.

The Box Ground is coarser and harder than any of the Bath stones, and while most sorts will go to pieces in frosty weather, this will stand the hardest frost. It may be safely used for any external work, plinths, copings or weatheriugs. Laying Bath stone on its proper bed has a great deal to do with its lasting well. This may always be determined by the thin black veins which run up the bed; they never run in the bed; and in some of the stone there are hard black veins termed lists or ribs; these always run in the bed and never across. The Box Ground stone can be obtained in lengths of 12ft. 6in. or 14ft. 6in.; the blocks vary in size from 4 to 120ft. cube.

The Corsham Down stone is the best to specify for inside purposes. It has a beautiful warm colour, and looks more effective than any other; while the other stones alluded to are very coarse, this is, on the contrary, of very fine texture, but durable and strong. It is free and easy to work, as, indeed, are all the Bath stones. It absorbs a great deal of water, and so in hard frost requires to be covered up, as it would burst if left exposed.

---

*Read before the Liverpool Architectural Society.

It is the most regular in quality of all, and considered the best of our English stones for internal work. Patches of dark blue or slate colour are sometimes found; these portions work in with the rest for ornamental effects in chimney pieces, &c.; the stone is sounder where these patches exist.

Another sort is the Farleigh Down stone, the principal feature of which is that the quarry contains two beds, the red bed and the white bed. This stone does not stand the weather well; it is more easily worked than any of the others, but the appearance is not so pleasing as the Corsham; it dries out often in red patches, giving an appearance termed foxy. It is in great demand in the neighbourhood where quarried, because of its price and easy working, but has no advantages to offer for Liverpool.

(To be concluded next week.)

THE PERPLEXITIES OF BUILDING.

THE guardians of the poor of Islington (says a local journal) have an unenviable handful in their workhouse building at Holloway. From the beginning this undertaking has been a continuous round of perplexities and vexations. Building materials have been complained of, delays have given rise to constant expostulations, the architect (Mr. Burden) and the contractor (Mr. Nutt) have differed intermittently, the one fretful at the tardiness with which his cash advances have been made, and the other hesitating to certify; "extras and omissions" have been imported into the original plan to an extent which has nearly doubled the estimated cost of the building, and, finally, the time at which the building should have been completed and handed over to the guardians has long since passed, and the work is nothing like finished yet. At the meeting of the guardians on Friday last, Mr. Nutt attended and demanded the payment of an advance of £3,000, adding that he had only received £1,000 during the last fourteen weeks, whilst the reserve of £7,000 had been in the guardians' hands for twelve months, and that he would not give up possession of the works until he was paid. This, one of the guardians interpreted as a threat, and hinted that legal proceedings might follow. The contractor asseverates that he is a greatly ill-used man, and that he should have had the work completed long since if he had not been unduly interfered with.

BIRMINGHAM ARCHITECTURAL SOCIETY.

THE Council of the Birmingham Architectural Society invites pupils and assistants, under twenty-five years of age, in the offices of members of the Society, to send in sketches and drawings of interesting buildings, and other architectural subjects, for which they will award the following premiums—namely, five guineas for the best, three guineas for the second best, and two guineas for the third best set of drawings, the merits of which will be determined by the Council of the Society. The subjects for sketching this year are portions of Aston Hall, and the Collegiate Church of Wolverhampton, the selection of which is left to the judgment of the student; the drawings to be plotted to a scale of six feet to one inch, with mouldings and ornamental details one-fourth real size; the sketches and measurements taken upon the spot to accompany the finished drawings; the drawings are to be in pencil, Indian ink, or sepia; the premiated drawings to become the property of the Society, all others will be returned to their authors; the drawings to be distinguished by a motto or device, and a letter containing the author's name, with a similar motto outside, to accompany them, which are to be delivered, free of expense, to the honorary secretary on or before the 1st day of December next. Students wishing to compete must send in their names to the honorary secretary by the 1st day of August, of whom any further information can be obtained.

THE SITE OF THE NEW LAW COURTS.—On Monday, in reply to Mr. W H. Smith, Mr. Ayrton said, as far as he could judge, the excavations for the foundations of the new law courts would be made at such an early period that it would not be practical to make a thoroughfare for the temporary use of the public.

ARCHÆOLOGICAL AND ARCHITECTURAL SOCIETIES.

LINCOLN DIOCESAN ARCHITECTURAL SOCIETY.—The members of this association had a most successful annual meeting on the 16th and 17th ult. at Boston. The proceedings commenced with Divine service at St. Botolph's, Boston, after which a description of the church was given. The churches of S. Leodegar's, Wyberton; S. Mary, Frampton Kirton; SS. Peter and Paul, Algar Kirk; S. Mary's, Sutton; SS. Peter and Paul, Wigtoft; S. Mary and Holy Rood, Donnington; S. Swithin's Becker; and S. Mary's, Swineshead, were then visited. The society's dinner took place in the Assembly Rooms on Friday evening.

SUFFOLK ARCHÆOLOGICAL SOCIETY.—On Thursday, the 24th ult., many of the members of this society, and their friends, paid a visit to several places of interest in the Mildenhall and Isleham district. The excursion was planned by Mr. Dewing, the secretary. Starting from Bury at 9 o'clock, Cavenham, Tuddenham, and Isleham churches, Isleham Priory, Wamhill, and Mildenhall Church, were visited. After inspecting a collection of antiquities, arranged for the occasion in the Working Men's Institute, Mildenhall, the party returned to Bury.

Building Intelligence.

CHURCHES AND CHAPELS.

ASHFORD.—The little village church of Ashford, Derbyshire, has recently (with the exception of the tower) been rebuilt. The old building possessed little architectural or antiquarian interest, and it was, besides, in so dilapidated a condition that reconstruction had become a work of necessity. The Tudor feeling in the old church has been maintained throughout the new work. The roofs are open-timbered, covered with tiles. The walls are of grey limestone, and for the windows, doors, and other parts, yellowish local sandstone is used. Messrs. Medland and Henry Taylor, of Manchester, are the architects, and the contract was taken by Mr. Joseph Brown, of Matlockbridge.

ASHTON.—The foundation stone of a new Wesleyan chapel at Ashton was laid on Saturday week. The building will be Gothic in style, and constructed of Staffordshire blue bricks, with stone dressings. Mr. Richard Oughton is the architect, and the work is to be carried out by local contractors.

GORLESTON.—An effort is about to be made to restore this, one of the finest churches in Suffolk. The false ceilings in the north and south aisles are about to be removed; and the screen at present dividing the north and south aisles is to be taken away.

IDLE.—On Saturday afternoon the foundation stone of a new Wesleyan chapel for Idle was laid by the Mayor of Leeds. The new place of worship will be 76ft. long, 49ft. wide, 32ft. high, and will afford accommodation for 760 persons, having galleries all round. There will be at the back of the chapel a large vestry or class room, besides a minister's vestry. The style is Italian. The design has been prepared by Mr. Samuel Jackson, and was selected from a limited competition. The building is estimated to cost £2600.

KNOWLE.—The foundation stone of the new church of the Nativity, Knowle, near Bridgwater, was laid on Saturday week. The style of architecture adopted is Byzantine, and the principal material employed will be brick, with coloured stone, marble, and tiles worked into the columns of the arches and the floor. There will be a tower 92ft. high at the south west corner, and the building will comprise nave, aisle, and chancel. The nave and chancel will both be 30ft. wide, and the sanctuary will be partially lined with marble; red Aberdeen granite will be used in the columns of the chancel. It is in contemplation to decorate the dome of the sanctuary with a picture of the "Last Judgment," and to have other paintings and freestone bas-reliefs beneath the windows. The ceiling will be decorated in colours. The roof will be covered with Bridgwater tiles, and the spire with green Westmoreland slates. The cost will be £5000. Messrs. Ponton and Gough are the architects, and Mr. W. Brock is the contractor.

LINTZ GREEN.—Last week the foundation stone of a Wesleyan chapel was laid at Black Hall Mill, between Ebchester and Lintz Green, on the Derwent Valley Railway. The edifice will be nearly cruciform, simple in construction, with round headed windows and doorways, and will be erected from plans drawn by Mr. J. Smith, architect, Shotley Bridge.

LYDEARD S. LAWRENCE.—The parish church of Lydeard S. Lawrence, near Taunton, which has been styled "The Cathedral of West Somerset," was reopened on Thursday week after restoration. The church consists of a chancel, nave, tower, north aisle, and north and south porches. The chancel and east window are of the Decorated period, and were built about 1350. In the chancel is a series of sedilia for the clergy, with a piscina of the same period. The nave, of Perpendicular character, was probably built about 1450, or a little later; the north aisle later still. The tower and porches are very fine specimens of Perpendicular work. One of the special glories of the church is its magnificent Perpendicular woodwork, including a rood screen. The restoration was commenced in September last, under the direction of Mr. C. Giles, architect, of Furnival's-inn, London. New open roofs of stained deal, covered with slate, have been constructed; the gallery in front of the west window removed, and the arcade dividing the nave and north aisle, having been thrust out of the upright by the weight of the old roofs, has been taken down and rebuilt. The many coats of limewash which covered the walls of the interior have been removed, and the stone tracery of the windows has been restored. Most of the old carved oak bench ends, and other woodwork, has been preserved and re-used, and new chancel stalls, reading desk, and altar rail provided, as also new reredos of Bath stone. Externally, the masonry has been repaired, but the tower and the two porches remain to be restored. The total cost has been £1400. Mr. S. Shewbrooks, of Taunton, was the contractor employed.

MAIDENHEAD.—The completion of S. Luke's Church, Maidenhead, was consummated on Saturday last by the dedication of the tower. The church is built in the Early English style of architecture, the materials being freestone, from Charlbury, Oxfordshire. The dressing is of Box ground Bath stone on the exterior, and Corsham Down stone in the interior. Mr. G. R. Clarke, of London, is the architect, and Mr. Griffiths, of Eldersfield, Worcester, the builder. The tower and a portion of the nave were not built when the church was consecrated, but the edifice has now been completed. The entire cost has been £3500.

MIDDLESBROUGH.—On Saturday afternoon the foundation stone was laid of S. Paul's Church, Middlesbrough. The church, which is to be an adaptation from the Middle Age Gothic, is designed by Mr. R. J. Johnson, architect, of Newcastle. It is to accommodate 700 persons and will cost about £4000.

REFUSAL TO CONSECRATE A CHURCH.—A new church at West Derby, about three miles from Liverpool, which has just been erected at the expense of a Mrs. Reade, was to have been consecrated last week by the Bishop of Chester. It appears that the walls, roofs, and almost every other part of the church are most artistically decorated and covered with paintings of the Apostles and other personages in Scripture history. The nave is divided from the chancel by a magnificent oak screen, richly painted in gold and colours, while the roof and walls of the chancel are still more elaborately decorated. The altarpiece consists of scenes from the Passion of our Lord, from His betrayal to the visit of the Marys to the Sepulchre. The Bishop, who visited the church a few days since with some of the local clergy, is said to have expressed his strong disapprobation of these decorations as being out of place in such an edifice, more especially the altarpiece. He refuses to consecrate the church until that is removed, as well as several other portions of the decorations. It is stated that the donor of the church declines to permit any of the decorations to be removed, and threatens to resort to measures to enforce the consecration of the church as it is now decorated. The cost of the edifice amounts to £30,000, and it has been erected from designs furnished by Mr. G. F. Bodley, architect, of Harley-street, London.

S. SAVIOUR'S CHURCH FOR THE DEAF AND DUMB.—The foundation stone of a church, unique in its character, will be laid by the Prince of Wales on the 5th inst. The deprivation under which the deaf and dumb labour necessarily excludes them from public instruction by the ordinary oral means, and the only effective way of addressing them, either in sermons or lectures, is by the finger and sign language. The Association in Aid of the Deaf and Dumb provides twelve services and a lecture per week, which are greatly valued by the deaf and dumb. The Association deem it requisite that a proper place of meeting dedicated to Divine worship should be provided. The Marquis of Westminster has given a site at the corner of Queen-street, Grosvenor-square, the frontage being in Oxford-street, and the Committee have now about £3000 in hand, including £50 from the Queen. The estimated expense is not less than £5000, for which sum, besides the church, there will be provided a large room for lectures, evening classes, reading and recreation. The contemplated residence for the chaplain will involve an additional outlay.

THE CHURCH OF ALL SAINTS, SURREY SQUARE.—This new church was consecrated on Monday by the Bishop of London. The former church was destroyed by fire in April, 1869, and a new and greatly improved structure has now been erected in its place. Through liberal donations a tower and spire of 116ft, and containing a fine deep-toned bell, have been added. The vestry has also been enlarged, and a powerful organ by Messrs. Bevington and Sons erected. The church is in the Decorated Gothic style, and consists of a nave, north and south aisles, chancel (with side aisles for organ and vestry), and the tower and spire at the north-western end of the nave. Free sittings are provided for 800 persons. The builder is Mr. W. Downs, Southwark; and the architect is Mr. R. Parris, of Kennington-road, Lambeth. The restoration of the church has cost £4900.

BUILDINGS.

BOLTON.—The works in progress for the new Town Hall, Bolton, were inspected by the committee last week. The very slow progress which is at present being made was matter of comment, and the architects, Messrs. Hill and Woodhouse, were directed to adopt means of compelling the contractor to complete the works within the stipulated period.

KIDDERMINSTER.—The Countess of Dudley laid the foundation stone of the new Kidderminster Infirmary on Tuesday. The architect is Mr. J. G. Bland, of Birmingham, and the builders, Messrs. Binnian and Sons, of Kidderminster. The contract is about £7000, and another £1000 is required for furniture, &c., in addition to £1000 for site.

THE NEW MANSION HOUSE STATION.—The directors of the Metropolitan District Railway, at their Board meeting on Tuesday, decided to adopt the plans and recommendations of their engineer, Mr. Fowler, for their city station. The station will be at the junction of Queen Victoria-street and Cannon-street, with the entrance at the corner of Cannon-street, and in view of the Mansion-house and the Royal Exchange. The contractors will commence the work forthwith, and it is anticipated that the station (which will be called Mansion-house Station) will be completed and opened for traffic in the beginning of next year. It is intended on the opening of this station to run trains in each direction at least every three minutes.

WHITECHAPEL.—New schools for the children of seamen and others, in connection with St. Paul's, Dock-street, Whitechapel, were opened yesterday (Thursday) by the Prince and Princess of Wales. The new buildings consist of schools for an average of 600 children, viz., 150 boys, 150 girls, and 300 infants, with residences for master and mistresses. There is a covered recreation ground for the children. The schools are from a design by Messrs. Greatorex and Co., architects, and the lowest of nine tenders was accepted (that of Mr. Thomas Ennor) for £4890.

◆

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

RECEIVED.—W. O. C.—W. D.—W. H. Reed—S. Birkbeck—W. S.—E. and R. Wallis—J. H.—G. E. M.—R. G. and Co.—J. A.—E. J.—Rev. E. W. S.—W. S. V.—J. S.—S. and Co.—J. and B.—Inquirer.

J. W.—The Index will be given next week.

W. S.—With MS. to folio 144.

W. W. T.—Apply to the Secretary of the Royal Institution of British Architects, 9, Conduit-street, Regent-street.

Correspondence.

PATENT VICTORIA STONE.

(To the Editor of THE BUILDING NEWS.)

SIR,—In reply to the letter which appeared in THE BUILDING NEWS of last week, I beg to say that Mr. Trickett is too well acquainted with stone not to know that its durability and value do not depend on its thickness. When our paving was first laid down in the Poultry Mr. Trickett prophesied that he would be called upon to take it up and lay down Yorkshire stone in its place within a month; but now from 10,000,000 to 12,000,000 persons have walked over it, and I think any impartial person will say it has worn better than the picked specimen of Yorkshire stone which was laid down at the time to compare with it.

Mr. Trickett says it will be expensive to take up our stone for repairing water-pipes, gas-pipes, &c., but if he made due inquiry he would find that it can be taken up and relaid as easily as York or any other stone; and he altogether overlooks the fact that as we can cast our stone easily in any form, nothing would be easier than to make it in the shape of an inverted trough, to lay over gas-pipes, water-pipes, telegraph wires, &c., and that it would only be necessary to take up the single channel prepared for this purpose, without any disturbance to the rest of the pavement. Let him tell us what Yorkshire channels thus formed would cost.

I will conclude by giving Mr. Trickett two challenges:—1. Mr. Trickett shall find a slab of Yorkshire stone, and we will find a piece of our stone; they shall be rubbed against one another for 24 hours, and the thickness worn off each at the end of that time shall be measured. 2. We will produce a beam of stone made in accordance with our patents of any dimensions, and Mr. Trickett shall produce a piece of Yorkshire of the same dimensions, and we will guarantee our stone to bear at least double the weight of his.—I am, Sir, &c. (for the Victoria Stone Company),

THE MANAGER.

DECORATION AND IMITATION.

SIR,—I cannot but admire the admirable skill with which your correspondent "J, R. W." winds and twists and fences with the questions at issue. He has undertaken an impossible task—namely, to prove that inconsistency is consistent, and that John Ruskin, in saying one thing, means another, which latter I for one do not believe. However, with this part of his letter I can have nothing to do, but must refer the reader to the text, and leave him to judge.

In the last paragraph he asks what I mean by the legitimate in decoration, and supposes that I mean legitimate as a synonym for the word beautiful. Now "J. R. W." knows as well as I do that I did not mean anything of the sort, nor would any man of average intelligence interpret the sentence so. What I do mean is that all materials and processes used and recognised by precedent and practice as being aids to decorative art become legitimate thereby: for instance, scaglioli is an imitation of marble universally acknowledged, admitted, and used by architects as a legitimate substitute for marble; consequently it is a legitimate aid to decorative art. It is in this sense, and this only, that I used the word legitimate.—I am, Sir, yours, &c., W. S.

COMPETITIONS.

SIR,—Competitions are not very plentiful just now, but of the few there are, I think two deserve notice.

A premium of £25 is offered by the Burial Board of Guisbrough for designs for laying out land for a cemetery, and for the various buildings required. No instructions are issued, and a sum of 5s. is asked for the plan of site, so that if the applications are numerous, the competitors will pay some of the premium, and render the competition a kind of architectural sweepstake. This is probably novel to most of your readers.

Another competition—that for laying out the Camberwell Charity Estate—has just escaped becoming a disgrace to the Vestry, through the energy of a few members who stood up for justice, feeling that if it was intended from the first to give the premium to the surveyor to the charity, why have asked for designs, and why have allowed the surveyor to compete?

The decision has been referred to an independent member of the profession, Mr. Pownall; but still some of the vestrymen will try to do all they can for their first and only love by sending with the surveyor's competition drawings the plans and reports prepared by him months before the competition.

Should Mr. Pownall select any design other than No. 4 (well known from the first to be the surveyor's) then I quite expect the premium will be paid to the author of that design, and the carrying out of the work will be entrusted to the charity surveyor in a similar way to the Walworth Common Estate competition, two years since.—I am, Sir, yours, &c., JUSTICE.

◆

Intercommunication.

QUESTIONS.

[1883.]—STRENGTH OF GIRDERS.—Can any of your readers who are up in calculating strength of girders, &c., tell me if it is usual in using Hurst's rules, to take $1\frac{1}{2}$ W, as is there stated, for beams fixed at both ends, when calculating strength of girders in ordinary floors, and whether in using girders with iron flitch, this rule of adding $\frac{1}{2}$ W is to be used, as I observe that the use of the flitch adds 30 T to the first rule, but alters the constant from 3 to 2·5, so that the one girder without the flitch would work out, adding the $\frac{1}{2}$ W for fixing, quite as strong as the one with a flitch?—PUZZLED.

[1884.]—CONVENTS.—Would any of your readers kindly give me a little information respecting convents, their arrangments, &c.? I wish more particularly for particulars for convent according to Anglican Church.—A. L.

[1885.]—BALL ROOMS.—Can anyone tell me what is the usual space allowed for each person in a large ball room?—L. B.

[1886.]—YELLOW LIGHT.—I wish to reduce the white light coming through ordinary glass windows into a large interior, and at same time to obtain yellow light. Understanding that both objects can be obtained by a slight wash of colour, I should be obliged if some of your readers could inform me which paints are applicable for the purpose, and the proper method of application?—A. B. C.

[1887.]—COLOURING TILES.—How can I colour red roofing tiles, after they have been burnt, so as to give them a dark brown or blue colour, and to so fix the colour permanently, that it will not be affected by the rain?—A SUBSCRIBER.

[1888.]—POLISHING PEBBLES.—Can any one inform me how to cut and polish pebbles?—W. SMITH.

[1889.]—ARCHITECTS' VOLUNTARY EXAMINATION,—Could any of your readers tell me if copies of the papers for the last examination are obtainable, and whom from?—PUPIL.

[Write to the Secretary of the Institute, 9, Conduit-street, W.]

REPLIES.

[1871.]—ARCHITECTS' CHARGES.—The architect in this case has made a very wrong statement in saying that it is a usual and recognised practice in London for architects to receive a commission from the contractors as well as the usual commission from the employer. It may be positively contradicted, and if the architect persist in it he should be called upon for proof of what he states. Would the employer publish the name of the architect?—G. S. B.

[1874.]—GLASS DRAWING BOARD (?) FRAME.—The apparatus alluded to consists of a wood frame, about the size of a large drawing board, containing a panel of glass British plate preferred, as in Fig. 1. This is fixed in a slop,

FIG. 1

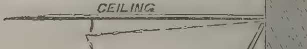
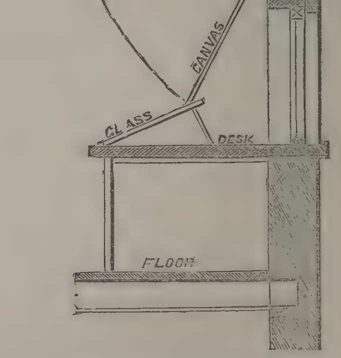


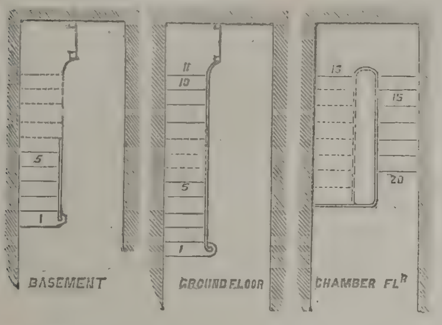
FIG. 2



ing position before a window, a similar frame, covered with canvas or paper, being lowered thereon for the purpose of throwing all available light beneath the glass, as in Fig. 2. The drawing to be copied is pinned to the wood frame, with a sheet of clean paper over it in the time-honoured manner As may be readily imagined, the thinnest paper must be used; and it is only possible to copy full size or large scale drawings by this method.—F.

* * *

[1876.]—PLAN ARRANGEMENT OF STAIRS.—Of the multifarious methods in vogue, the appended is, in my opinion, most explicit:—The strong lines indicate the commencement and termination of the flights upon the level or floor in question, and should be coloured so far as the strong lines extend. Steps overhead should never be dotted on a ground plan, more especially if they are over a gangway: the tendency being to mistake them for steps on the ground floor level.—F.



◆

STAINED GLASS.

Conicliffe.—The east window of Coniscliffe Church has just been filled with stained glass. The window is Early English in style, and it is divided into three compartments. In the central one is represented the Crucifixion, with S, Mary and S. John standing at either side of the Cross; in a space beneath is depicted the Last Supper; and the subjects in the side openings are the Agony in the Garden, the Betrayal, Scourging, Entombment, Resurrection, and Ascension. The ground work is grisaille, on the best antique glass. The window has been designed and executed by Mr. Baguley, of Newcastle, who has also executed a new painted reredos for the church.

Hinton S. Mary.—The east window of the parish church of Hinton S. Mary, Dorsetshire, has just been filled with stained glass by Messrs. Clayton and Bell, as a memorial of the late Vicar, the Rev. C. J. Nicholl, The central subject is the Crucifixion, with the Virgin Mary on one side and S. John on the other.

The Lickey Memorial Window.—A very handsome memorial window has been erected by the parishioners in Holy Trinity Church, to the memory of the late Baroness Windsor, who died on the 9th of November last. The window is a three-light one, erected over the altar, the subjects being Faith, Hope. and Charity, represented by emblematical figures. It also bears the sacred monogram, the Alpha and Omega, the arms of the deceased lady, and other appropriate devices. It has been supplied by Mr. Camm, of Smethwick, late principal designer to Messrs. Chance.

An Ancient Window.—The stained glass window, purchased from the prior of Furness Abbey, at the dissolution of the monasteries, and removed to the parish church, Windermere, 335 years ago, has been removed to London. It is to be restored, from the drawings of similar windows in the Bodlein Library, provided that funds can be raised for the purpose.

◆

LEGAL.

Alleged Slander.—Chatterton v Nelson—The plaintiff in this case was the lessee of Drury Lane Theatre, and the defendant, Mr. Marsh Nelson, was the architect and surveyor to that establishment, The action was to recover damages for slander. The case for the plaintiff was that in June, 1869, a Mr. Robinson had a contract to redecorate the theatre for the sum of £3210; and in reference to it he saw the defendant, who made statements to the effect that if Mr. Robinson did the work he would probably lose his money, and that it was likely that a Chancery suit would be commenced against the plaintiff and he would be turned out of possession. At the conclusion of the opening speech a consultation took place between the counsel. Mr. Hawkins said that what Mr. Nelson said had been entirely misunderstood, that he never made any imputation whatever upon Mr. Chatterton, and that there was not the slightest ground for any imputation. Mr. Nelson was desirous that the friendly relations that had formerly existed between him and Mr. Chatterton should be resumed, and it had been arranged that the matter should be referred to a gentleman who should have absolute power to direct how the litigation should be terminated. His Lordship subsequently saw the counsel in his private room, and on his return said that he trusted that everybody was perfectly satisfied that there was no imputation of any kind resting upon Mr. Chatterton, but there were certain legal difficulties in the way of the plaintiff, and therefore it had been arranged that a juror should be withdrawn. The Solicitor-General said that having regard to the legal difficulties which had been referred to, he would consent to the terms that had been mentioned. A juror was then withdrawn.

Repair of Public Bridges.—The Highway Act, 1835, (5 and 6 Will. IV., c. 50), enacts that "highways" shall be understood to mean all roads, bridges (not being county bridges), &c., and in subsequent sections provides for the repair of highways in a manner therein specified, not at the expense of the hundred in which they are situate. It has been held by the Court of Crown Cases Reserved (says a legal correspondent), in the case of "The Queen *v.* The Inhabitants of Chart and Longbridge," that "county bridges" in section 5 includes public bridges, and that a public bridge which has from time immemorial been repaired by a hundred is, since the Highway Act, 1835, still repairable by the hundred.

Unpaid Vendor of Land to a Railway Company.—A vendor of land to a railway company whose purchase money is unpaid is entitled (says a legal correspendent), like any ordinary vendor, to have his lien enforced by a sale of the land, but he is not entitled to an injunction to restrain the company until sale from making use of the land which he had sold to them. Vice Chancellor James having granted such an injunction in the case of Munns v. The Isle of Wight Railway Company, his order was discharged on appeal; but a receiver was appointed, and the Company was directed to let him into immediate possession of the land.

Architects and Minors.—The case of Wallis *v.* Kemp, heard at the Westminster County Court on Tuesday week was one of some interest to the architectural profession. The plaintiff, Mr. G. W. Wallis, of Lincoln's-Inn-Fields, is an architect and surveyor, and he sought to recover £40, being the usual charge for preparing specifications and taking out quantities (viz., 2½ per cent. on the cost of the buildings) of two villas, the cost of which was to be £1600. The defendant was Mr. A. C. Kemp. From the statements of counsel it appeared that there had been a previous action, when it was alleged the wrong party (Mr. E. O Kemp, a brother of the present defendant, and a minor) was sued, and pleaded infancy. It appeared that the plaintiff received the following letter on the 8th of July, 1868:—"22, St. Swithin's-lane, July 8, 1868.—Dear Sir,—Would you have the kindness to favour us with a call to-morrow before 1 o'clock, as we have some business we may possibly place in your hands.—Kemp Brothers." In response to that letter the plaintiff went to 22, S. Swithin's-lane, and saw the present defendant, who produced the plans and drawings of two villas, and engaged with plaintiff to get out quantities and prepare a specification. On subsequent occasions the present defendant, A. C. Kemp, called at Mr. Wallis's office in Lincoln's-Inn-Fields, and asked "How is *my* work getting on?" and, finally, he called at Mr. Wallis's office, and received a bill of quantities and specification. In explanation of how it happened that the wrong party was sued in the original action it was stated on behalf of the plaintiff that he had received several letters signed E. O. Kemp during the time the work was in progress, and came to the erroneous conclusion that the writer of the letters (E. O. Kemp) and the party whom he saw at S. Swithin's-lane, and who called upon him—viz., Mr. A. C. Kemp, were one and the same person. On Mr. Wallis sending in his account it was repudiated by a letter signed E. O. Kemp, it being alleged in the letter that the plaintiff had agreed for only 1 per cent. on the outlay in case the buildings were erected, or a fee of 5 guineas in case they were not. Mr. E. O. Kemp was then sued in this court, and pleaded infancy. The plea being successful, the plaintiff was nonsuited. The present action was then commenced. After Mr. W. M. Taylor, an architect and surveyor, had been called in support of the reasonableness of the charge of 2½ per cent. for such work, and, to show that it was the customary charge in the profession, Mr. Wallis was sworn, and deposed to the present defendant, A. C, Kemp, being the person whom he saw at St. Swithin's-lane, and who gave him the plans and drawings to aid in drawing up a specification. Mr. Wallis also swore to the defendant A. C. Kemp as calling at his office "to see how *my* work is getting on." Joseph Connor, a youth in the office of the plaintiff, and Mr. Guy, formerly a clerk of the plaintiff's, also proved that A. C. Kemp was the person who called at Mr. Wallis's office, and the latter witness proved that the same person called at the office and received the bill of quantities and the specification for which payment was now sought. The defendant, upon being put into the box, admitted having written the letter before quoted and signed "Kemp, Brothers," but swore positively that he did not see Mr. Wallis at St. Swithin's-lane, nor give him the drawings as stated that he did not call, as alleged, at the office of the plaintiff; and that the villas in question were no affair of his, but they were a private matter of his brother's (E. O. Kemp). The counsel for the defendant rested his case on the fact that all the letters from the plaintiff were addressed "E. O. Kemp," that all letters to the plaintiff, with the exception of the first, were signed "E. O. Kemp," and that the account was made out to "Mr. Edward Kemp." It was contended that the plaintiff had virtually given up his case in his letters to the present defendant and another brother (Mr. Fredk. Kemp) after he was nonsuited in the case of Wallis *v.* E. O. Kemp. The following extracts from letters from the plaintiff to the present defendant subsequent to the first action were read:—"There is one thing I wish to make you acquainted with, that is, your brother, E. O. Kemp, instructed me to prepare some work, and gets out of the payment by being an infant at the time:" and "Through your brother being an infant I have lost my claim." Upon this evidence the learned judge nonsuited the plaintiff with costs.'

Ancient Lights,—Barrett v. City of London Real Property Company (Limited).—This was a motion in the Rolls Court to restrain the defendants, who are carrying on extensive building operations in Mark-lane, from breaking into or cutting away the walls of the plaintiff's premises, Nos. 12 and 13, Mark-lane, where he carries on the business of a printer, or using the same as a party wall in the erection of their buildings, as well as from building any chimney, as it was alleged the defendants were doing, so as to darken or impede the light or air heretofore coming to the windows of the plaintiff's premises. The Master of the Rolls made an order restraining the defendants from building the chimney complained of, and directed the rest of the motion to stand to the hearing of the cause.

◆

The Darlington Exhibition.—The collection of the productions of art and science, now being exhibited in the Mechanics' Hall Darlington, is valuable and extensive. The objects which claim and receive chief attention are the paintings, which, though not properly a legitimate element in the collection, are additions and attractions which the committee secured. Among the results of the labours of skilled mechanics are an oak and elm Gothic sideboard, and other articles of furniture worth exhibition; specimens of graining and panelling; an electro-magnetic apparatus for working the block system on a railway; a model of a revolving fort; McDermid's patent paper-hanging machine, &c. The opening ceremony took place under the presidency of the Mayor of Darlington.

Our Office Table.

Civil and Mechanical Engineers' Society.—The annual general meeting of the members of this society was held on the 22nd ult., when after votes of thanks had been passed to the retiring president, W. Forsyth Black, and the other out-going officers, the following were elected on the Council for the year 1870-71., President; James B. Walton, Assoc. Inst., C. E. vice-presidents; C. J. Crosbie Dawson, Assoc Inst., C. E., Frederick E. Cooper. Council; R. M. Bancroft, H. E. Hunt, Frederick A. Klein, A. H. Lavers, William Meakin, Arthur Tyrrell, Arthur T. Walmisley. Hon. treasurer, Arthur C. Pain, Assoc. Inst. C.E. Hon. secretary, Charles H. Rew. Hon. accountant, J. Wagstaff Blundell. The past presidents, W. Forsyth Black, Benjamin Haughton, G. Eedes Eachus, Assoc. Inst. C.E., and William Maw, are *ex officio* members of the council.

Metropolitan Board of Works.—The following is the estimate of the expenditure of this Board for the year ending at Lady Day. 1871:—1. General working expenses, provided for by the consolidated rate, £432,546—namely, £307,632 for interest and repayment of principal of securities granted before the passing of the Consolidated Stock Act of last Session, and £124,914 for sewerage and drainage, maintenance of parks, expenses under Acts relating to petroleum, dangerous structures, Fire Brigade, contagious diseases of animals, building, &c. 2. Amount payable out of the Consolidated Loans Fund, for interest and principal, £164,599. 3. Amount to be expended on metropolitan improvements, &c., £897,000, viz., Stingo-lane improvement, £50,000; main drainage and main sewers, £497,000; Park-lane improvement, £123,000; Chelsea Embankment, £135,000; contributions to minor improvements, and for completion of Finsbury and Southwark Parks, and Whitechapel and Kensington improvements, £77,000; Fire Brigade (capital account), £15,000.—Grand total, £1,494,145.

Dwellings for the Working Classes at King's Cross.—It is intended to convert the King's Cross Market, in the Old S. Pancras-road, into dwellings for the working classes of the neighbourhood, where, owing to the great destruction of house property for the making of the new Midland railway station, such erections are greatly needed. The plans show that the greatest care has been taken to secure every domestic and sanitary requisite. There will be two hundred tenements, each complete in itself.

Building on the Thames Embankment.—Mr. W. H. Smith, the member for Westminster, has given notice of motion in the House of Commons that an address be presented to her Majesty, praying that no buildings may be placed upon the land reclaimed by the making of the Thames Embankment. It will naturally be surmised (says the *Post*) that Mr. Smith would not have taken this step had he not been made aware of the existence of some design for building upon this land. Such a surmise would have a substantial foundation of fact to rest upon. The design of erecting some of the proposed new Public offices close to the Embankment has been seriously entertained. More than that, the exact site has been selected, and the plans for the buildings are actually being drawn. In fact, it has been decided to build a new Admiralty and a new War Office on the reclaimed land between Whitehall-place, Whitehall-yard, and the Embankment. Either on the score of public convenience, æsthetic feeling, metropolitan improvement, or the ratepayers' rights—virtual, if not strictly legal—the sudden resolution of the First Commissioner of Works to build upon the land reclaimed from the Thames should be resisted. Better far that the concentration of the public offices should stand over until we are in a position to approach our great pending architectural questions in a becoming spirit than that we should undertake the work with the sole idea of providing so many cubic feet of buildings in the cheapest possible manner.

Certifying for "Extras."—At a special meeting of the Shrewsbury Town Council the other day, the certificate of the architect of the new markets, Mr. Griffiths, was put in, and the Council were asked to pay the balance of £8321 due to the contractor. Mr. Griffiths had been requested to supply particulars of the account, but had declined, on the ground that it was against the custom of the profession.

As the "extras" amounted to the enormous sum of £11,846, some members of the Council thought it rather hard that the bill should be passed in the dark, and a proposal was made to accept Mr. Griffiths' offer of measurement; but eventually the clerk was instructed to raise the necessary money and discharge the debt.

THE ROYAL ENGINEERS.—The numerical strength of the officers of Royal Engineers is (according to the *Post*) to be considerably increased, in view mainly of the urgent prospective requirements of the Public Works Department of India. The precise mode of carrying out the augmentation must depend upon the recommendations of Captain Vivian's committee on the promotion in the scientific corps. In all probability the additions to the Royal Engineers will be made gradually, rank by rank, from the lowest commissioned grade upwards.

SOIREE AT THE ROYAL ACADEMY. — The Royal Academy of Arts gave a soirêe on Tuesday evening in their galleries at Burlington House, Piccadilly, which was most numerously and fashionably attended. The picture galleries were thrown open about half-past nine, and the enjoyment of the evening was much enhanced by the performance of music. Refreshments of a light character were furnished to the visitors in several of the rooms.

REFUSING HONOURS. — Mr. Courbet, the French painter, has written a long letter to M. Maurice Richard, Minister of the Fine Arts, refusing the Cross of the Legion of Honour conferred on him on the occasion of the late Paris Exhibition. He grounds his decision, first, on the fact of his being a Republican, and therefore not willing to accept any favour or mark of honour from a person on a throne; and next because it is the public alone that can properly reward the merits of an artist.

PROPOSED SHIP CANAL AT CAPE COD.—A number of Boston (U.S.) capitalists have organised a company to construct a ship canal across Cape Cod, at a cost of about 8,000,000dols., and have applied to Congress for an appropriation of 2,000,000dols. to construct a breakwater to protect the entrance to it. The scheme is an old one, it having been advocated as long ago as the time of Miles Standish. United States' engineers have recently investigated the proposed plan, and have reported favourably upon it.

WORKMEN'S DINNER.—The employés of Messrs. Morant, Boyd, and Blandford, decorators, &c., 91, New Bond-street, had their annual dinner at the Crown Hotel, Broxbourne, on Saturday last, upon which occasion the principals of the firm were present. Mr. Morant presided. After dinner the sports and pastimes commenced. Not the least attractive one was a handicap foot-race of 100 yards, for two silver cups, to be awarded to the two best men contending in a grand heat. There were about 70 subscribers of 1s. each, which sum was supplemented by 10s. subscribed by Mr. Morant. There were 60 entries, and these were divided into eight divisions, the best man of each to be eligible to contest the grand heat. That heat resulted in a dead heat between Messrs. Keteyroo, jun., artist, and Fairbanks, cabinet-maker, which, on being ran over again, Keteyroo was declared the winner, through Fairbank's having crossed his opponent's path. The judges were Messrs. Boyd and Blandford, and the handicaper Wm. Carpenter, whose assiduity deserves especial mention. After a well-spent day, all returned to town, highly delighted with their day's outing.

STEAM ROAD ROLLER.—The large gold medal was awarded to Messrs. Aveling and Porter, for their 15 ton steam road roller at the exhibition of machinery held last week at Lille.

Chips.

A plan for a system of tramways in the streets of Calcutta has been submittted to the Indian Government. The estimated cost is £1000 per mile,

A new public park and gymnasium, at Ashton-under-Lyne, presented to the town by Mr. Hugh Mason, was opened on Saturday last.

Mr. Samuel Hall, of Battle, has given £500 towards the new buildings for the Coventry School of Art.

Negotiations have been completed for the erection of a lighthouse on Hartland Point, in the Bristol Channel.

Mr. J. H. Smith, architect, of Trinity, Taunton, has been elected surveyor to the Local Board of Health in that town. There were 34 applicants for the office, but Mr. Smith received the almost unanimous support of the boacd.

Kent House, so long the residence of the Duke of Kent (father of tne Queen), and subsequently of Lord Clarendon and Sir Cornewall Lewis, is being pulled down.

A new market is about to be erected at Whitchurch, Salop.

Mr. Speakman, architect, of Manchester, has been commissioned to prepare the plans for the alterations proposed to be made in S. John's Church, Atherton.

A new Catholic church, dedicated to S. Mary Magdalene, was opened at Seaham Harbour on Thursday week.

Mr. John Wilson, of Blackburn, has been appointed surveyor to the Bacup Local Board, at an annuul salary of £120. There were twenty-five candidates.

It is proposed to erect a new workhouse for Burnley, to accommodate 350 inmates, at a cost of £15,000.

The Woolwich Board of Guardians have decided upon the erection of a new parochial dispensary and relief offices in King-street, from plans by Messrs. Church and Rickwood.

Mr. James Lund, of Sheerness, has been appointed to the Surveyorship of Worthing.

The foundation stone of a new hall for the Coachmakers' Company, in Noble-street, Gresham-street, was laid recently by the Master, the old hall having been pulled down and part of the site appropriated to the erection of warehouses.

High Holborn will be closed for carriage traffic from the 4th to the 30th inst. (both days inclusive), for the purpose of being repaved.

The improvements at Hoxton (mentioned in last week's BUILDING NEWS, p. 483), will be carried out, the Shoreditch vestry having decided to widen the streets mentioned, and to pay £4415 10s. to Sir J. T. Tyrrell for the land.

Mr. Bridgman has been appointed assistant-surveyor to the S. Pancras Committee of Works.

The "Presse" states that the French Cabinet have decided so raise the loan of the City of Paris to 680,000,000 francs, in order to continue the public works commenced under the administration of M. Haussman. For a time, therefore, the troubles of the Parisian builders are averted.

Timber Trade Review.

At Messrs. Churchhill and Sims' sale on Wednesday, the following goods were offered :—

20,000	Spruce deals, &c.
37,000	Quebec pine deals, &c.
73,000	Swedish deals and battens.
93,000	Norway deals and battens.
11,000	Finland deals and battens.
4600	Riga deals.
160,000	Prepared flooring and match boards.
5600	Fresh Norway spars and poles.
2000	Dantzic deck deals.
100	Riga wainscot logs.
200	Fathoms lathwood.
100	Loads Norway balks.
70	Loads Stettin oak timber.
50	Loads Quebec birch.
2800	Loads Dantzic fir timber.
119,000	Feet Norway and Swedish mouldings.
	&c., &c.

The prices obtained for which were as under :—

		£ s.		£ s.
Archangel 1st yellow deals ..	per Petg. std.	12 0		
Abo 1st millsawn yellow		7 0	to	8 5
Do. 1st millsawn white		7 15		
Do. 1st handsawn white		7 10		
Borga handspikes	per dozen	No bids.		
Bjorneborg yellow	per Petg. std.	6 5	to	6 10
		s. d.		
Brisbane treenails	per 1000 of 36in.	55 0		
		£ s.		£ s.
Christiana 2nd yellow	per 120 2½ × 6½	6 15	,,	7 0
Do. 3rd do.		6 5	,,	6 10
Do. 3rd do.	per Petg. std.	4 10	,,	5 10
Do. 1st white	per 120 12 3 × 9	16 10	,,	18 0
Do. 1st and 2nd do.		13 5		
Do. 2nd do.		13 10		
Do. 2nd do.	per Petg, std.	8 0		
Do. 3rd do.	per 120 12 3 × 9	11 15		
Do. 3rd do.	per Petg. std.	4 10		
		s. d.		s. d.
Do. spars 4 to 6in.	per foot run	0 1⅛	,,	0 1¼
Do. poles 22ft. 2½in. tops	each	1 6		
Do. poles 18 to 22ft. 2 to 3in. tops		0 11		
Christinestadt handspikes	per dozen	4 9		
		£ s.		£ s.
Calmar lathwood	per cub. fthm.	4 0		
Dram 1st yellow	per 120 12 2½ × 6½	5 15	,,	7 0
Do. 2nd do.		6 15	,,	7 15
Do. 3rd do.		6 5	,,	6 10
Do. 4th do.		6 0		
		s. d.		s. d.
Do. hewn yellow balks	per load	30 0	,,	32 0
		£ s.		£ s.
Do. 1st white	per 120, 12 2½ × 6½	5 15		
Do. 2nd do.		5 15	,,	6 10
Do. 3rd do.		5 10		
Do. 3rd and 4th do.		5 0		
Do. 4th do.		4 15		
		s. d.		s. d.
Dantzic crown deck deals	per 40ft. of 3in.	15 6	,,	18 0
Do. crown brack do.		13 6	,,	14 6
		£ s.		£ s.
Do. lathwood	per cub. fthm.	4 0		
		s. d.		s. d.
Do. 1st middling timber	per load	75 0		
Do. good middling do.		54 0	,,	64 0
Do. common middling do.		50 0	,,	51 0
Do. undersized best and good do.		50 0		
		£ s.		£ s.
Drontheim 1st white	per Petg. std.	5 15		
Do. 2nd do.		5 5		
Do. 3rd do.		4 15	,,	5 0
Fredrickstadt white		4 15		
Do. 3rd do.		5 10		
		s. d.		s. d.
Do mouldings	per 100ft. run.	3 0	,,	4 0
Do. architraves		7 9	,,	9 6
		£ s.		£ s.
Gefle 1st and 2nd yellow	per Petg. std.	9 15	,,	10 15
Do. 3rd do.		7 10	,,	9 0
Do. 4th do.		7 10	,,	9 0
Gothenberg 3rd. do.		7 10		
Do. 4th do.		6 5	,,	8 5
Do. 1st and 2nd white		7 0	,,	9 0
Do. 3rd do.		6 15	,,	8 0
Nystadt millsawn yellow		6 15	,,	8 0
Do. white		7 5		
Petersburg 1st white		7 10		
Do. lathwood	per cub. fthm.	5 10	,,	7 15
Quebec 1st bright yellow pine..	per Petg. std.	15 0	,,	18 0
Do. 1st. dry bright		16 5	,,	17 15
Do. 1st. floated		13 0	,,	16 0
Do. 1st dry floated		14 10	,,	17 15
Do. 2nd bright		10 10	,,	13 0
Do. 2nd dry bright		10 15		
Do. 2nd floated		12 0	,,	12 5
Do. 2nd dry floated		9 10	,,	12 15
Do. 3rd bright		8 15	,,	9 10
Do. 3rd floated		8 10	,,	9 0
Do. 3rd dry floated		8 0	,,	9 0
Rimouski 1st white spruce	per 120 12 3 × 9	14 10		
		s. d.		
Riga crown wainscot logs	per 18 cub. ft.	95 0		
Do. Dutch crown do.		72 6		
		£ s.		s. d.
Do. crown white	per Petg. std.	8 10		
Do. half-crown		7 10		
Swartwick 1st and 2nd yellow		9 0	,,	10 10
Do. 3rd do.		7 10	,,	8 0
		s. d.		
Stettin oak	per load	80 0		
Do. oak crooks		92 6		
		£ s.		£ s.
St. John's 1st white spruce	per 120 12 3 × 9	14 10		
Do. 2nd do.		13 10		
Do. 3rd do.		12 5	,,	12 15
Uddewalla, 1st and 2nd yellow	per Petg. std.	8 10	,,	8 15
Do. 3rd do.		6 15	,,	7 15
Do. 4th do.		7 0		
		s. d.		s. d.
Fredrickstadt 1st yellow prepared flooring ¾in.	square	7 0	,,	7 3
Do. ⅞in.		8 0	,,	8 3
Do 1in		10 6	,,	11 9
Do. 1¼in.		14 0		
Do. 2nd do. 1in.		7 6	,,	8 0
Do. 1st white do. ¾in.		7 3		
Do. ⅞in.		8 6		
Do. 1in.		8 0	,,	8 6
Do. 2nd. yellow grooved, tongued and beaded ⅞in.		5 3	,,	5 6
Do. 1st white grooved and tongued ⅝in.		7 0		
Do. ⅞in.		7 0		
Do. 1¼in.		12 0		
Do. 2nd white do. ⅝in.		5 6		

Trade News,

WAGES MOVEMENT.

THE BRADFORD CARPENTERS AND JOINERS.—On Friday last a meeting of the journeymen in these trades was held in the Seeular Hall, Southgate, Bradford, to take into consideration the position of affairs in regard to the advance of ½d. per hour conceded by the board of arbitration, and which was to come into operation on the 1st of March last by joint agreement between the employers and employed. Some of the masters had paid the advance, others had not, others again were paying 1s. a week extra, and some who had at first kept the agreement were not doing so now because it was not a general thing in the trade. A correspondence was read that had passed between the committee of the operatives and the secretary of the masters' association, and it was stated it had been agreed to meet the employers who had paid the advance. Three resolutions were passed—one pledging the operatives to render moral and pecuniary support to the committee to carry the matter to a successful issue; the second specified that if an amicable arrangement could not be arrived at by the 1st of July, and the advance be paid, work should cease in those shops where the advance was not paid until the decision of the board was carried into effect: the third was that if an agreement could not be come to on Monday, the men should cease to work in the shops which did not give the advance on the following Saturday. The speeches throughout were of a temperate character, regret was expressed that the employers generally did not carry out the decision of the board, and to show the prosperous state of the trade, it was stated that the Amalgamated Society of Carpenters and Joiners in Yorkshire numbered 23 branches and 1502 men. In March last 300 men were out of work, but now only seven men were in need of employment. In Lancashire there are 27 branches and 1491 members, of whom, in March last, 500 men were seeking work, while now there were only 15. In the United Kingdom, and inclusive of two societies in America, there were 239 branches and 9828 members. Of this number 900 men wanted employment in March, but the number had sunk to 192, being 100 less than in the preceding month. Under these prosperous circumstances the men found themselves in a good position, and while being willing to do all in their power to avert a strike, by meeting the employers, they expressed their strong determination to enforce the decision of the board, even if they had to adopt the painful alternative of a strike.

THE BUILDING NEWS.

LONDON, FRIDAY, JULY 8, 1870.

THE LONDON CORN EXCHANGE COMPETITION.

In consequence of the insufficient accomodation afforded, by what is called the Old Corn Exchange,* Mark-lane (to distinguish it from the *annexe* or *succursale* on the north side, erected in 1827, and called the New Corn Exchange), a committee of proprietors appointed for that purpose last year, requested Mr. I'Anson, and Mr. William Haywood to survey the Exchange, and the buildings in connextion with it, and to report to the committee as to the most desirable mode of increasing the accommodation for the business of the market, and remedying the inconvenience resulting from the present defective system of ventilation. These gentlemen made a joint report, in which they stated that their observations and inquiries led them to the conviction that it would be impolitic to attempt any extension or partial improvement of the existing Exchange, and recommended the entire removal of the buildings on the ground floor, and the construction of a new Exchange covered by a glazed roof at a higher elevation than the present, in one span. They also recommend the formation of a Flour market on the first floor, next Mark-lane, an Oil and Seed market on the ground floor at the south-east angle of the Exchange premises, together with other recommendations of minor importance.

This report having been taken into consideration by the committee, and reported to the general body of shareholders, it was resolved to carry into effect the recommendations of the report, and for that purpose it was determined to invite a limited number of architects to submit designs for rebuilding the Corn Exchange, according to Messrs. I'Anson's and Haywood's suggestions. By the terms of the conditions under which the architects were invited, the competitor whose design is selected for execution will be entrusted with the preparation of the drawings and the superintendence of the work, at the usual commission, and premiums of 200 guineas and 150 guineas respectively, are to be given to the two designs considered next in order of merit. The amount for carrying out the work is not to exceed £20,000, exclusive of architect's commission, and clerk of works' salary.

In reply to the invitations of the committee, 17 architects agreed tó compete, but of these 13 only sent in designs, which are now placed in a range of upper rooms of Corn Exchange Chambers, Seething-lane. These designs are, as might have been expected, of varying merit, but although there is, perhaps, no single design that could be adopted in its entirety, there are strong evidences in most of careful study of the requirements of the case, combined, in at least two instances, with artistic excellence of the highest order. The problem to be solved is very much complicated by the necessity of avoiding obstruction to the light and air of buildings on three out of four sides of the Exchange. These difficulties have been very fairly met in most of the designs, but it unfortunately happens that those designs in which the rights of light of adjoining owners are best respected, have but little to recommend them on the ground of originality of conception or artistic treatment. These designs are all timid and "safe" in their general features, and there is a painful evidence of a desire on the part of their authors to conciliate the prejudices of the committee and to avoid anything untried or novel in construction. It is worth noticing that only one design out of the thirteen sent in is entirely Gothic, and that of a very poor sort: the external elevation of another is treated in the style of the French country houses of the 16th century, but the interior is pure Renaissance, and one is decidedly Romanesque.

By the instruction of the committee, the drawings were sent in under a motto or device, but, inasmuch as the names of the competitors were well known, it is not very difficult to assign the designs sent in, with more or less certainty, to their respective authors, and it is difficult to say why this restriction should have been imposed upon the competitors.

The following is the list of the drawings submitted, with their mottos. The alphabetical arrangement has been adopted by the committee for convenience of reference.—

Plan A, Seges. Palladian.
Plan B, A Wheatsheaf. Palladian.
Plan C, Veritas. Nondescript.
Plan D, Honestas. Free Italian.
Plan E, Iron Framed. Pseudo-Gothic.
Plan F, L'Etoile.
Plan G, Au bon Droit. Palladian.
Plan H, Omne tulit punctum qui miscuit utile dulci. French Renaissance.
Plan I, Progress. French Renaissance.
Plan K, A Maltese Cross. Commonplace Italian.
Plan L, All's Well that Ends Well. Romanesque.
Plan M, Light. Palladian.
Plan N, Three Wheatears. Ditto.

In order to estimate the difficulties to be overcome, and the manner in which they have been dealt with by the several competitors, it will be useful to give some account of the site of the proposed New Exchange, and the surrounding buildings. The present Corn Exchange is an irregular parallelogram about 84ft. by 65ft. with a frontage to the West on Mark-lane, and extending back eastward to a range of offices in the rear of a building called Corn Exchange Chambers, Seething-lane. The range of offices referred to is proposed to be removed, and the new market would therefore be bounded on the west by Mark-lane, and on the east by Corn Exchange Chambers, the lights of which it is important to preserve, the ground floor being used as a subscription room in connection with the Corn Exchange, and the upper floors let out as offices. On the north the proposed Exchange abuts upon the New Corn Exchange, a low building lighted by skylights, the wall dividing the two buildings being only 25ft. 6in. high, at the highest part, and on the South upon lofty buildings belonging to other owners, with an area towards the west end which it is important not to interfere with. The most important objects to be attained are the substitution of a lofty roof to replace the present low roof, which is only about 18ft. high, exclusive of the domes—without interfering with the light and air of adjacent premises, nor the vaults beneath the area of the Exchange, which are let upon lease for a long term—the rectification of the irregularity of the boundary on the north side, without loss of space to the market, and the proper warming and ventilation of the building.

Setting aside some differences in detail, the designs may be broadly divided into five classes, according to the mode in which they propose to accomplish the roofing of the Exchange, and having first arranged them under their separate heads, we will then proceed to examine them further in detail.

Class 1.—Glazed single span roof carried on iron columns.

B. A Wheatsheaf.
C. Veritas.
D. Honestas.
E. Iron Framed.
F. L'Etoile.
M. Light.

Class 2.—Ditto without iron columns.

I. Progress.
K. Maltese Cross
N. Three Wheatears.

Class 3.—Glazed single span roof on iron columns, with aisle on north side.

A. Seges.
L. All's Well That ends Well.

Class 4.—Glazed roof with central nave and 2 side aisles.

G. Au bon Droit.

Class 5.—Domed roof, upper part glazed.

H. Omne tulit punctum qui miscuit utile dulci.

From the above analysis it will be seen that 5 out of the 13 competitors have adopted the expedient of carrying the roof upon iron columns, in order at the same time to avoid any interference with the foundations, and to obviate the want of parallelism in the two side walls. The majority have literally carried out the recommendation of the joint report of Messrs. H. I'Anson and Haywood, and provided a glazed roof over the whole area in one span, two competitors propose a nave with an aisle on the north side, to avoid obstruction to the light of the New Corn Exchange; one competitor provides two aisles, apparently with a view to symmetry of arrangement; and one proposes to cover the Exchange with two massive domes each 54ft. across.

Class 1.

B. A Wheatsheaf, is very elaborately shown by a series of showy rather than effective drawings. The two perspectives are coloured in a very forcible manner, and the report is adorned with two photographs of the exterior and interior of the Exchange. The roof in divided into 3 large bays with 4 smaller intermediate bays, with octagonal lanterns in the large divisions. The roof is carried by flat wrought-iron girders with quadrant ends resting upon iron stancheons built into the side walls.

The Flour Market is placed on the first floor of the Mark-lane building, lighted by a skylight. The arrangements for warming and ventilation are very carefully shown, and have been worked out by an engineer whose identity is not difficult to discover from the reference in the report to the buildings warmed under his direction. The question of blinds, upon which great stress is laid in the Instructions to Architects, is only alluded to in the report, and has evidently been very slightly considered. There is a certain boldness and decision of touch in the treatment of the interior which will no doubt find admirers, but it is open to doubt whether the building would turn out as well in execution as it looks upon paper. The elevation in Mark-lane depends mainly upon carving, bas reliefs, and groups of emblematic sculpture, which have very little chance of being carried out, and has very few architectural features. The massive girders in the interior would considerably interrupt the access of light to the Exchange, and the construction of the roof would render the management of blinds difficult. The Flour Market is not connected with the rest of the building, and is treated as a distinct apartment, which is a very undesirable arrangement, and there would be very little chance of adding galleries hereafter, as required in the Instructions to Architects. The lights of adjoining owners would be very slightly, if at all, affected, the north wall adjoining the New Corn Exchange being only 20ft. high, which is at least 2ft. below the lowest part of the present wall. The basement is but slightly interfered with, but it would be necessary to carry down the piers supporting the main girders of the roof. The cost is estimated not to exceed £20,000.

C. Veritas.—This is, upon the whole, an unsatisfactory design. The drawings are bad, with the exception of those showing the arrangement of the blinds, and the elevation next Mark-lane is a composition which for ugliness and pretension it would be difficult to match even in the City. The Exchange is covered by an arched roof supported by lattice principals, the feet of each of which rest upon groups of 4 light iron columns

---

[*] The Old Corn Exchange was built in 1749, and has since that time been considerably enlarged and re-arranged, the last important addition having been made about 18 years since, by Mr. Legg.

about 30ft. in height. The whole of the roof is glazed, and there are clearstory windows between each principal. The Exchange is 52ft. high to the ridge of the inside skylight, and 50ft. wide between the iron columns. An outer roof is provided to preserve an equal temperature, and prevent the unsightly appearance usually presented by single roofs.

The north wall is 33ft. high, which would to some extent interfere with the lights of the adjoining building. Cost estimated at £18,300.

The Exchange is proposed to be warmed by hot water pipes laid in the floor, covered with iron gratings. This would be quite impracticable in a corn market, as the corn thrown about would choke up the gratings and render the apparatus useless. Several of the competitors have fallen into this mistake. H (*Omne qui tulit, &c.*,) however, proposes to introduce fresh warmed air at a considerable height from the ground, through openings in the side walls concealed by the decoration; and F, *L'Etoile*, suggests admitting cold air through the spandrils of the arches, and warming the Exchange by hot water pipes placed in a case against the walls at a height of 11ft. above the ground.

D. *Honestas*. This is an extremely able and conscientious design, thoroughly well thought out. The elevation next Mark-lane is a very graceful composition; the cornice, however, is scarcely deep enough, and although the architecture of the interior is hardly equal to the external elevation, the design may be pronounced, upon the whole, both from an artistic as well as a practical point of view, the best of those submitted.

The Corn Market is covered by a double roof, the outer portion being an ordinary iron span roof carried upon upright standards resting upon the ribs of a low segmental inner roof, which is divided into square coffers, and is proposed to be glazed with "pure Venetian glass." The want of parallelism in the side walls is concealed by carrying an arcade of three arches across the Exchange at its narrowest part, dividing the area into two lengths, and masking an awkward break in the wall on the North side. This object might have been as effectually accomplished by bringing out piers on each side and turning an arch across in one span; the break would have been concealed as well, and the two intermediate columns might have been dispensed with. The roof is 32ft. high to the springing, and 48ft. high to the crown of the inner roof. The Flour Market is on the first floor, next Mark-lane, lighted by skylights towards the north, as well as windows next the street. The Flour Market is open next the Exchange, and has two projecting wings on each side in order to connect it, if required, with galleries, if these are determined upon hereafter. The blinds have been very carefully studied and are shown by a very good drawing to a scale of 4ft. to an inch. They consist chiefly of roller blinds placed under the outer roof of the Exchange, and worked from below. The flat skylight at the Eastern end of the Exchange is protected by upright screens, in which are hung Venetian blinds. The question of warming and ventilation is not so elaborately studied as it has been by some of the other competitors (notably by the author of *Wheatsheaf*), but it has not been overlooked, and it is evident that the construction of the Exchange would very much simplify any arrangements for that purpose. *Honestas* recommends the use of Watson's ventilators, which have been successfully employed, to his knowledge, in the Edinburgh Corn Exchange. The estimate for this design is £20,000, exclusive of the necessary work to the basement, and it might probably be accomplished for that sum.

E, *Iron Framed*, is a peculiar Gothic design, the author of which piques himself upon the very un-Gothic expedient of constructing the whole of his buildings of iron, and filling in between the framework with Portland stone. The plan has not been much considered, but great pains have been taken to show the paving, which is proposed to be of tiles. The market is covered by a pointed roof carried on corbels, resting on iron columns, placed against the walls. The roof is divided into six bays, and has two polygonal ends. The appearance of the interior, which is shown by a nice perspective drawing, excites some apprehension for the safety of the roof, which is not dispelled by an examination of the geometrical drawings, the construction being passed over with a light hand. The Mark-lane elevation consists of a central tower, rising to the height of 80ft., and two other towers at the flank, each 64ft. high. It is to be presumed that the author of this design has had but little experience of the difficulties attending building in the City, or he would never have proposed to carry his elevation to such a height. A double roof is provided to the Exchange, and it is proposed to place a line of pipes for warming the building in the space between the two roofs—a very good suggestion.

F. *L'Etoile* is a striking and, in many respects, an original and artistic design. It unfortunately happens, however, that in this case, as in others we shall have to notice, the author has not sufficiently appreciated the importance of non-interference with the light and air of adjoining properties. The North wall is carried up solid to a height of 42ft. above the floor of the Exchange, and above that is a semicircular glazed roof, which rises to a height of 65ft. This roof is continued through into Mark-lane, and although it may be alleged that a glazed roof offers no obstruction to light, it is doubtful whether the owners of houses on the opposite side will be brought to take such a view of the subject.

The roof of the Exchange is in one span, semi-circular in shape and carried on iron stancheons built against the walls, and concealed by columns of red Mansfield stone, 7in. in diameter, four to each stancheon. This roof is continued, as already explained, as far as Mark-lane on the West, and extends to within 20ft. of the back of Corn Exchange Chambers, and is terminated at each end by a glazed gable,

The style is Italian, but it is treated with great freedom and ability, with a strong French feeling. The elevation next Mark-lane, consists of 3 wide arched openings, supported upon rather slender stone columns, with a deep architrave and elaborate entablature, above which appears the roof of the Exchange. There is an unity of composition about this desigh which is wanting in most of those sent in, which induces us to regret the author has not paid more attention to the more practical requirements of the committtee. The elevation repeats the general features of the interior, as it should do, and there is a lightness and air of spaciousness about the interior view, which is very agreeable and appropriate. The ironwork has been carefully worked out, and is shown by a very good sheet of details. The blinds are proposed to be outside wood blinds, similar to those commonly used for conservatories in Paris, only with a slight difference in their fixing, and copper wire being used instead of iron. The scheme for warming and ventilating has been already described, and appears to be very simple and feasible. The author's estimate for this design is £18,107, or, if the roof is made wider at one end than the other, as suggested, then £19,650, which appears not too much, considering the size of the building.

M. *Light*. This design, which is the last in the class in which the roof is carried on columns, is a heavy elaborate design, in what may be called the City Offices style. Everything is large and pompous, and looks as if it cost money. The proposed building is very fully shown by 9 sheets of drawings, including 2 coloured perspectives, and there are also 2 untinted perspectives, showing parts of the interior. The roof of the Exchange has glazed quadrant sides, with a continuous lantern light, and rises to a height of 66ft. The principals are carried upon light iron columns placed as near to the walls as the irregularity of the plan will permit. The cupboards in the north wall are retained, so as to cover the break in the wall on that side. The elevation in Mark-lane, is 50ft. high, and does not show any originality. The entrance to the market, is at the north-west corner of the building, as at present, with a good staircase to the Flour market on the first floor. The Flour market looks into the Exchange area, and may communicate with the Exchange by means of the galleries, if added. The stairs to Corn Exchange Chambers, are shifted to the south-east angle of the building, but the improvement effected is not manifest.

The ventilation has not received much attention, and the warming is proposed to be by gratings in the floor, which, as before explained, would be most objectionable. The arrangements suggested for carrying out the works without interfering with the Corn market are very carefully treated in the report, and are worth consideration. The estimated cost is £18,500, exclusive of the basement.

Class II.—Without Columns.—Plans I, K, and N.

I. *Progress*, is a very original conception, and is very fully illustrated by a series of remarkably well executed drawings, the decoration in particular being admirably shown. In these drawings, as in the design *L'Etoile*, there is evidence that the author has founded his style upon the study of modern French models, and there is in consequence a refinement and completeness which are for the most part wanting in the other designs.

The most prominent feature of the design *Progress* is a large roof 70ft. high and about 50ft. wide at the level of the cornice. The ribs are in the form of an inverted catenary, and are continued down to the ground and tied at the feet by ties passing under the floor of the Exchange. The roof is by this means carried entirely independently of the walls, and the basement is consequently not interfered with. The North wall is, however, raised to a height of 32ft., for the sake of the appearance of the interior, which is a serious drawback to what is upon the whole a very ingenious design. The decoration of the interior is extremely bold and effective; a cornice is formed at a height of 32ft. from the floor, and the curved ribs are concealed by sloping pilasters projected into the Exchange, and finished with an elaborate ingenious termination resembling the prow of a vessel, most charmingly treated. The break in the wall on the North side is taken advantage of to construct a sort of pavilion, which forms a most agreeable feature in the interior. The Flour Market is arranged at the Mark-lane end, under the same roof as the Exchange, the roof being continued on to within 16ft. of Mark-lane, and terminates there in an elaborately decorated gable. There is also a gable at the eastern end of the Exchange, which would completely overshadow Corn Exchange Chambers. The Mark-lane elevation is a very skilfully designed pure Italian composition, very nicely drawn, but with rather more colour than the terms of the instructions warrant. The ventilation and blinds are not expressed upon the drawings, but provision could be made for the latter by means of the double roof, which is proposed. The cost is said not to exceed £20,000, but it is evident that much of the decoration must be omitted in order to bring it within that sum, and stripped of its decoration the design would lose very considerably in effect. Although this design impresses very much at first sight, there is a certain sense of want of practicability induced by consideration of the drawings. It appears to be the work of a decorative artist rather than a practical architect, and the airy manner in which the difficulties of the position are discussed in the report goes far to confirm the impression conveyed by the drawings.

K, a *Maltese Cross*, is a safe commonplace design, in which the requirements of the instructions are fairly carried out, but without a spark of originality, and scarcely any suggestion of improvement. The roof, semi-circular, is in one span, carried on the walls on the South side, and on the North by stancheons, some of which are placed obliquely, to avoid interruption to the light. The roof springs at a height of 32ft. from the floor of the Exchange, and rises to a height of 60ft. ; provision is made for galleries if required. The only suggestion worthy of remark is the proposal to cover the roofs with unbleached calico strained upon frames, as is done at the Crystal Palace. The estimated cost is stated at £20,000. The elevation and perspectives of this design are very badly drawn.

N. *Three Wheatears* is an ambitious and rather handsome design, coarsely and sometimes carelessly drawn, but worth consideration. The North wall is however carried as high as 32ft., which will probably militate against its chance of success. The roof is semi-circular, carried by lattice ribs and iron purlins, and is nearly 70ft. high to the ridge. The principals are carried on piers against the side walls, the North wall being brought forward somewhat in order to make the side walls parallel. The appearance of the interior is agreeable, the piers are treated as pilasters, carried up to the springing of the roof ; a frieze 8ft. high is continued round at a height of 12ft. from the floor, with a rather ill-proportioned arcade over, and a deep cornice breaking round the pilasters. The east end terminates in a gable, with an enormous wheel window, which is proposed to be filled with stained glass. An arrangement of stands is suggested, something similar to that of *Progress*, the divisions corresponding with the bays of the exchange. Inside blinds are proposed for the roof, but their arrangement is not remarkable. The Mark-lane building containing the Flour Market Committee-room and offices is 90ft high to the parapet, with a lofty roof, and contains no less than five stories, which have been apparently introduced to mask the roof of the new Exchange. The estimated cost is £20,000. which looks as if it had not been considered. The Exchange alone at 6d. per foot cube would come to almost that sum.

A. *Seges* is a modest, unpretending design, very insufficiently shown by four drawings without any perspective, but it should not on this account be passed over. The Exchange consists of a nave 45ft. wide, covered with a semicircular iron roof 56ft. high, which is the same height as the present cupola, divided into six bays. On the north side is an aisle about 10ft. wide and 18ft high, roofed with a flat skylight, by which means all interference with the adjoining lights is prevented. The architectural character of the building is not of a high order, but it is much in advance of other more showy designs. The elevation next Mark-lane has the merit of expressing the system of construction adopted for the interior, the nave being emphasised by a break, and the front of the aisle receiving a different treatment to the rest of the front. The cost is estimated at £16,000, exclusive of heating and fittings.

L. *All's Well that Ends Well* is an original but rather eccentric composition, and is shown by four very well executed drawings, evidently by the author's own hand. This is the only design with a flat ceiling, The nave is 46ft. wide and 46ft. high, with a range of clearstory windows on the north side overlooking an aisle 11ft. wide and 33ft. high. The lighting is peculiar, the roof being divided by beams into coffers, which are pierced in the centre, and covered with half-domes of glass, 6ft. 10in. in diameter. The effect of the interior as shown by the perspective is far from unpleasing, but the general design is too archaic to find favour with the practical men of Mark-lane. The elevation next the street is decidedly Romanesque, and is prettily composed. The author suggests that the first-floor of the Corn Exchange Chambers should be appropriated to the Flour market, and the whole area of the Exchange left open. He estimates the cost at £18,000, which seems a moderate estimate.

G. *Au bon Droit* is the only design which shows a double aisle. The nave or central portion is 30ft. wide, and the aisles each about 13ft wide. The nave has a glazed semi-circular roof, resting on iron columns, and the aisles glazed quadrangle roofs resting partly on the walls. The Exchange would be 187ft. by 60ft.. The foundations would not be interfered with, the columns resting upon the old vaults under the Exchange. The floor of the Flour market is proposed to be constructed of iron, in small squares, filled in with glass, to prevent loss of light to the Exchange below. The elevation in Mark-lane is a weak, characterless Italian front, but the interior, as seen in the perspective, is agreeable. The author states that he has had the quantities taken by an eminent building surveyor, and is prepared to say that the cost will be £19,450.

H. *Omne tulit punctum qui miscuit utile dulci.*—A magnificent but utterly impracticable design. The market is covered by two domes each 54ft. in diameter, the upper part of which are glazed, resting upon massive piers built against the side walls. The central piers are 15ft. wide, and project 6ft. from the walls. The stalls are arranged in the recesses between these piers. The side walls are carried up to a height of 80ft., and there are no signs of any attempt to conciliate the prejudices of adjoining owners. The front in Mark-lane is 83ft. high to the top of the parapet, with dormer windows, and a lofty roof 108ft. high, which height is continued over the whole of the Exchange area. The view of the interior is a most exquisitely drawn and coloured drawing, by Mr. Brewer, with the decoration worked out in the most elaborate manner. It would be impossible to see the Exchange in the manner represented if it were carried out, and the drawing must be looked upon as a study of decoration rather than a perspective drawing of what the building would be. The style adopted is the French Renaissance, such as is used at the chateaux of Blois and Chambord. The elevation next the street is less successful than the interior, but is nevertheless very ably treated.

ANTIQUITIES OF ROME.

At the last meeting of the Archæological Institute, Mr. Parker gave a most interesting description of the work of investigation into the antiquities of Rome as recently carried on by himself and others, referring to the series of photographs which he is now exhibiting at Cundall's Gallery, in New Bond-street, to which we have already briefly called attention. As these photographs will be found of the highest interest, and will only be on view for a very short time, and as their number and variety are necessarily somewhat embarrassing to visitors who have not themselves seen the originals, we propose to note some of the more salient ones, and to give a clue to the objects they represent. The character of the construction of the walls of the various fortifications and edifices in Rome is a sure test of their age, and is therefore the first point to be mastered. This may readily be done in this exhibition, as photographs specially taken for the purpose are arranged chronologically. By these it will be seen that the work of the periods of the Kings, of the Republic, and of the Empire are clearly distinguishable as follows :—That of the *Kings* consists of large oblong blocks of tufa stone, set, as it were, in what is called, with regard to brickwork, English bond fashion—that is, headers in one course and stretchers in the next, and without mortar. They have not been neatly wrought or polished on the face, but roughly hammer-dressed only, and towards the end of this period, as in the work of Servius Tullius, they have the edges chamfered, and are cramped together with iron cramps, which are simple bars of that metal with each end turned down.

The student may study with advantage photograph No. 779 as illustrative of work of the age of Romulus, being part of his supposed wall on the Palatine, B.C. 750 (?) By the rod marked with feet placed alongside, the stones would appear to average 4ft. in length by 2ft. in width. Photograph No. 829, of the Wall of the Kings on the Aventine near S. Bisca, shows well the internal structure, and gives the thickness of the wall, which is about 10ft., against which a later concrete wall or facing has been erected, giving an additional thickness of 2ft. Photograph No. 792 shows a part of the walling of Servius Tullius, and No. 141 a larger portion of the Wall of the Kings, with an inserted arch of the time of the Empire, or, as it is thought, by Hannibal, and No. 1582, Gabii, may be referred to as exhibiting the character of these primitive fortifications—in this case the wall being only the natural rock cleft, with the modern huts forming the village of Castiglione clustered under its shelter, in the exact form and manner of those described by ancient writers. It is to be regretted that the portion of the wall of Servius Tullius which was discovered has since been very ruthlessly and needlessly destroyed by the railway company upon whose ground it stood. The work of each successive king, or to speak more correctly, of each half century during their reigns, are distinguishable by the size of the stones used.

The character of the work of the time of the *Republic* is specially of concrete. This was at first faced with wood, which has perished, but left the holes visible by which it was fixed. Probably at first the concrete was used without knowledge of its strength for the purpose of rendering more stable the wooden construction on which reliance was placed, and that as experience was gained the wood was abandoned and the facing became of the reticulated and other descriptions which mark the time of Sylla. The photograph of the Emporium, about B.C. 175, well illustrates this class of construction, as also No. 70, in which it is shown at the junction with the city wall. No. 364 is a photograph of remarkable interest. In the catalogue it is called "Walls of Rome, Palace of Sylla (?) c., B.C. 60. Part of the substructure against the cliff of the Pincian Hill." It shows two tiers of niches, a style of construction much used in the walls of Rome, for the following reason : A portion of walling built against the cliff had settled to such an extent that it overhung, and still overhangs its base considerably. The builders, finding it at last went no further, and had come to its final bearing, built, as may be seen in other photographs adjoining this, another height of vertical walling upon that which had settled, and for lightness and strength made it in a series of niches, the piers of which formed buttresses, and on to which the arched linings of the niches threw the weight or thrust, and this was found so successful and economical a method that they continued to build the walls afterwards in the same manner from the ground, placing one tier of niches above the other.

The work of the *Empire*, is mainly brickwork, varying in the successive centuries both as to the thickness of the bricks and of the mortar joints, from 10 courses to the foot in the 1st century, 8 courses in the 2nd, six in the 3rd, to 4 only in the 4th. The perfection of this Roman brickwork was in the time of Nero. In the early period of the Empire travertine blocks began to be used, tufa blocks only having been previously employed, and the facework was better wrought. (See photograph No. 67, the arch of Dolabella, A.D. 10). Photograph No. 21 may also be examined with advantage ; it shows two arches at the

Porta Triburtina at different levels; the nearer one is of the time of Honorious, A.D. 400, who added gates to the walls, another of which is well illustrated in photograph No. 668. Beyond this inner archway, which is at a proper level above the present surface, is another of the time of Augustus, the jambs of which are almost completely buried; this difference between the levels tells a curious tale—namely, that originally the excavated trenches of the fortifications were used as the roads, and the archways in the walls accommodated thereto, and that at a subsequent period most of these sunk roads, which resembled the lanes in Devonshire, were filled up, and the new gateways made to suit new roads formed on the surface of the general ground. The tradition that all the soil of Rome has been greatly raised is incorrect, and founded upon a misapprehension of the above facts, an evidence of which was till lately presented by the juxtaposition of these two arches. The inner one, however, we regret to learn, has, since the photograph was taken, been destroyed to serve some miserably small economical purpose of the Papal Government. Photograph No. 34 represents a portion of the Amphitheatrum Castreuse, c. A.D. 166,—L. Verus, and shows some of the best description of brickwork, with an attached order, the columns of which have good capitals of moulded brick or terra cotta. Photographs Nos. 1206 and 1216 excellently show the very fine walling of Aurelian, with its remarkable corridor for the sentinels within the thickness of the wall, a work of stupendous magnitude considering its length of many miles. Previously a mere pathway on the inside of the walls had been the only provision for this purpose.

Another set of the photographs which excited considerable interest at the meeting of the Archæological Institute were those of the Marmorata, or wharf for landing marble, &c., under the Emporium excavated in 1869, with walls forming the facework of the bank towards the Tiber, with the opus reticulatum of the 1st century, with the clivus or inclined landing stage, paved with square slabs, and bold corbel stones projecting from the top of these with a large hole drilled in them for ropes to pass through to moor vessels by. In front of one of these wharfs there is a square panel inserted, with an amphora carved upon it to indicate the place for landing wine or oil. (See photographs 1045, 1048, and 1169.) No. 1170 has especial interest, as it shows one end of a large column of marble buried in a singular manner in a dock of that period and built over in the Middle Ages. This column it has been determined to erect in commemoration of the present Œcumenical Council, but unfortunately it was not found to be as long as was expected, and so another archæological monument of value has been destroyed to provide material to make a base under it, to raise it to the desired height.

The series of photographs and drawings connected with the aqueducts are most valuable, but we have not space to speak of them, and they form a subject more suitable to civil engineers to investigate. The French Government has recognised their value by ordering copies of the whole series for practical purposes, and have expressed their gratitude for this work having been done, as they had contemplated doing it themselves, with the view to assist their engineers in the arrangement of the water supply of the metropolis and towns of France. We may perhaps call attention to photograph No. 1066 as well illustrating the reticulated work, c. A.D. 100, which faces the pier of Aqua Trajana.

To the very large collection of works of art in the catacombs and museums of Rome we have not space now to devote, but there are two—Nos. 1500 and 1501—which we propose to enlarge and illustrate in a future number of our journal, as of remarkable curiosity and interest to our readers. The former of these, from a tomb of the Aterii of the 1st century, now in the Lateran Museum, illustrates a bas-relief in which are represented a temple or tomb, and a machine for raising stones and a ladder by means of a treadmill, as mentioned by Vitruvius. This tomb was thought to be that of an architect. The latter, from another bas-relief, also from the tomb of the Aterii, contains representations of various structures, such as temples and triumphal arches, so that it also would appear to be the record of the works of architects of that time. The above samples out of a collection of 1800 historical photographs will, we think, serve to show that they contain a mine of wealth to architectural students, by whom we hope the opportunity of this exhibition will not be neglected. J. P. S.

ARCHITECTS AND THE LAW.

Clown: But is that law?
Gravedigger: Ay is't, crowner's 'quest law.
Hamlet.

THE legal rights of architects, so often the subject of recent discussion, have received some elucidation from the trial of the case Ebdy v. McGowan, a report of which we give in another column. We remember hearing somewhere of a midshipman who, having to fill up a return concerning the natives of some remote island, did it as follows:—"Manners, none;" "Customs, disgusting." We fear it has been hitherto too much the fashion, even amongst themselves, for architects to be considered as a class of men about which it might be said in the same way—"Rights, none;" "Responsibilities, innumerable." Whenever by any chance an unfortunate architect has acted without due skill, exceeded his estimates, overlooked bad work, or otherwise failed in his duty, he is fair game, not merely for heavy deductions from his fees, but also for actions for damages—of which we have had occasion in our time to record not a few; nor are there ever wanting brethren of the craft to bear witness against him for real or imaginary derelictions; so much so as, on one notable occasion, to draw from Lord Campbell the remark, that of all species of enmity the *odium architectonicum* was about the worst.

When, however, an architect has honestly discharged his duty, and sent in a moderate and reasonable claim, in accordance with the published rules of his profession, but some wrong-headed or close-fisted client chooses to dispute it, his rights are apt to become very obscure. If he appeal to some of the "dons" or "pundits" of the profession, he is advised to "take whatever he can get," and "keep out of law, at any rate," for that the regular charges are "only recommended, and cannot be enforced." We are happy to say that the law of the land, as shown in this case, is more rational and intelligible. As well tell us that the Bank of England is only "recommended" to pay the value specified on its notes, and that payment "cannot be enforced," as that an architect who has done honest work on the order of a client, is not to be paid for it according to the regular scale of his profession, but according to the mere whim or fancy of that client. No doubt mild "recommendations" are very good in their way, but are much more likely to be acted on when it is known that they have the majesty of the law to "enforce" them in case of need.

It is rather remarkable that the burden of contests such as the present generally falls to the lot of the younger and less known architects. Roguish committees and clients think twice before they refuse to pay the claims of the leaders of the profession. A notable instance of this we had recently in which a church committee, having discarded the designs of a leading architect, were astonished by the receipt of a bill for £700 from him (we presume his full commission), which we are told "fell like a bombshell among them," and caused them to reconsider their decision, as such a great gun in the profession was evidently not to be trifled with. It would be different had a younger man been concerned, who would in all likelihood have asked only half the money, and whose modest claim would have been resisted to the utmost. At least such seems to be the way as regards the plaintiff in the present case, whose only fault seems to have been that his claims were too small, nothing having been charged by him for a good deal of work done, such as to elicit an observation from the Lord Chief Baron, "that he had certainly not shown any grasping disposition"; but who, in recognition of this spirit of moderation, is rudely dismissed and his claims, however fair, resisted to the last. Those of our readers who will study the evidence about the parsonage, and the arbitrary conduct of the rev. defendant, will only wonder that the latter was let off so cheaply, and that the plaintiff did not claim, as he certainly might have done, his full commission on that work, he being ready and willing to do his part, and only prevented by the unwarrantable interference of the defendant. His retention of the drawings was both reasonable and usual. To give them up would be just to put a premium on wrong doing, encouraging the client to dismiss him, and place the work in other and, possibly, incompetent hands. On this point we cannot but express our surprise that an architect of such standing as Mr. Sydney Smirke should have given such unsatisfactory evidence. According to it, a client though not entitled to the drawings for the 5 per cent., still may dismiss the architect when the drawings are prepared, and then may claim them for 2½ per cent! Surely, this is a patent absurdity, and we trust the eminent architect, who we think was rather betrayed into it than otherwise, will see it to be such. We know the stock argument—"the client, then, gets nothing for his money." We answer, "If the project be abandoned, he cannot need the drawings, but if he arbitrarily dismisses the architect who prepared the drawings on the faith of having the superintendence also, he (the client) properly deserves to get nothing." It will be observed that the learned judge gave the defendant leave to move the full court to reduce the verdict on this point if he thought he could show cause. If he thinks fit to do so, we shall probably have the subject ably argued, and we confidently anticipate such an utterance as will for ever dispose of this question, to the full satisfaction of the profession. The rev. defendant may thus, though unintentionally, serve the cause of a profession for which we fear he hardly entertains sufficient respect. He has already done it good service by causing a verdict to be given fully in accordance with the Institute scale, which we opine it will be hardly safe to question in future. We, however, advise him, in accordance with the suggestion of the Chief Baron (not to speak of higher principles), to make it up with his architect as soon as possible, allow the latter to go on with his work and build the parsonage, and then bury all differences in a good "house-warming." W. F.

THE CORN EXCHANGE COMPETITION.

AFTER a very careful examination of the drawings, and after several meetings at which they were assisted by professional assistance upon points of construction, the committee finally decided upon recommending the design D, Honestas (Mr. H. Stock), to be carried out, and the designs Progress (Messrs. Watson and Hesketh), and A Wheatsheaf (Mr. Crossland), for the second and third premiums respectively. This recommendation was on Thursday week ratified by a meeting of the general body of shareholders. There was a very close contest in the committee between the two first competitors, Mr. Stock's design having been chosen, upon a division, by 21 votes to 18.

We have every reason to believe that the competition has been conducted in a perfectly honourable and disinterested manner, and we congratulate Mr. Stock upon his deserved success. His design is shown by a series of very well executed drawings, in which the whole of the construction is very clearly indicated, and there is no reason why it may not be carried out with scarcely any variation from the competition drawings. The favourable remarks we have made elsewhere upon Mr. Stock's design were written before the decision of the committee had been arrived at.

Names of Competitors.

A, Seges	Mr. Caldwell.
B, A Wheatsheaf (device)	Mr. William Henry Crossland (of Leeds).
C, Veritas	Mr. Joseph Peacock.
D, Honestas	Mr. Henry Stock (Messrs. Snooke & Stock)
E, Iron-framed	Henry Carr (engineer).
F, L'Etoile	Mr. Cuthbert Brodrick (of Leeds).
G, Au bon droit	Messrs. Salter & Wyatt.
H, Omn tulit punctum qui miscuit utile dulci	Mr. G. Gilbert Scott, jun.
I, Progress	Messrs. Thos. Henry Watson & Robert Hesketh.
K, A Maltese Cross (device)	Mr. George Barnes Williams.
L All's well that ends well	Mr. George Truefitt.
M, Light	Mr. Edward Augustus Grüning.
N, Three Wheat-ears (device)	Messrs. Giles & Biven.

ARCHITECTURAL ASSOCIATION.

THE concluding meeting of this Association for Session 1869-70 took place on Friday evening last, Mr. Lacy W. Ridge, President, in the chair. The minutes of the previous meeting having been read and comfirmed, a vote of thanks was passed to Messrs. Davis and Emanuel for permitting the members of the Association to visit the new Jewish synagogue at Upper Berkley-street.

The Exhibition of 1871.

Mr. J. Douglass Mathews, honorary secretary, said that two meetings back he read a letter from Lieutenant-Colonel Scott (Secretary to the Commissioners for the Exhibition of 1871) asking the Association to appoint a member of the Association to serve on the jury for the subject of Architecture in the ensuing Exhibition. In compliance with that request, Mr. Hayter Lewis was nominated to the post, but a letter had been received from that gentleman, stating that absence from England, and other causes, would prevent him from acceding to the wish of the Association. In the room of Mr. Hayter Lewis, Mr. Mathews proposed that Mr. T. Roger Smith be asked to accept the post.

Mr. Tasker moved, as an amendment, that (in view of the manner in which the President of the Institute had been treated by the Commissioners) the Association send no representative at all. He thought it would be highly presumptuous for them, as representing the junior members of the profession, to have anything to do with the Exhibition after the Institute had declined, as a body, to have anything to do with it.

Mr. J. T. Perry seconded the amendment. He did so, he said, quite apart from the manner in which the Institute had been treated by the Commissioners. The Institute had declined, as a body, to have anything to do with the Exhibition, and, as a result, Architecture would not be so well represented as it might be. But the Commissioners of the Exhibition would say, whatever was the quality of the show made by Architecture, that it was properly represented, whereas in all probability it would only be represented by the younger members of the profession. He thought the Commissioners insulted the Association by putting it on a par with the Institute.

Mr. Mathews said the Association had nothing whatever to do with the course taken by the Institute. The Institute had declined to have anything to do with the Exhibition because its President *ex officio* was not put upon the list of Commissioners. But although this demand of the Institute was not acceded to, two of its past Presidents had been put upon the Commission. The Commissioners had invited, not only the Institute and the Association, but the Architectural Museum and the Architectural Exhibition, to select representatives to serve as jurors, and the two latter bodies intended to conform to the request. It was quite certain, continued Mr. Matthews, that the ensuing Exhibition would be an exceedingly popular one, and if the whole body of architects snubbed its promoters they would make a mistake. Foreign architects were taking it up, and it behoved the English not to be behind hand. Any professional pique against the Exhibition on account of the President of the Institute *ex officio* not being one of the Commissioners should be waived on the present occasion. Besides, if the Association selected a representative juror, he would represent Architecture as a profession as well as the Association as a body, and whether the majority of the designs exhibited came from the younger or senior members of the profession, Architecture would be very much judged of by the show presented. The Exhibition, too, was to be annual, and in all probability the Architectural Exhibition would, in course of time, be merged into it, and therefore the works of architects would come before the public in a degree hitherto unknown. There would be nothing gained by refusing to send a representative; in fact, much would be lost by taking such a course. The refusal to put the name of the President *ex officio* of the Institute upon the Commission was not necessarily an insult to the profession. The next best thing had been done by the Commissioners—viz., to add to their number two past Presidents of the Institute. By the Charter of the Commissioners, only two *ex officio* Presidents of societies are eligible as Commissioners—viz., those of the Institution of Civil Engineers and the Geological Society. Just at present the general feeling of the public was not very favourable to architects, and however wrong the public impression might be, a factious opposition to the Exhibition by the profession would only confirm that impression.

The Chairman said he thought it would be wise to keep to the course which the Association had previously chalked out for itself in nominating Mr. Hayter Lewis. The grievance (real or imaginary) of the Institute was not one which the Association was called upon to take up. The Institute had refused, as a body, to have anything to do with the Exhibition for a reason purely personal to itself, and not to the profession generally. The Association was asked by the Commissioners to nominate a gentleman to serve as one of a jury of six architects and two laymen, and in order that the architectural members of the jury should have the confidence of the profession, the architectural societies were asked to nominate them. He thought that the accidental circumstance (for such it appeared to have been) of the President *ex officio* of the Institute not being on the Commission had been to a certain extent fairly met by putting on the commission two past Presidents of the Institute, men of extremely influential position, one of whom, Sir William Tite, had only just retired from the office of President, the other, Mr. Beresford-Hope, having preceded Sir William in the same office. The Institute had not, perhaps, gone the best way to work to attain the end desired; at any rate, the result was that the Institute would do nothing as a body, though it did not seek to prevent its members sending in anything they liked to the Exhibition. He was sorry that this was another instance in which the Institute had signalised itself by doing nothing—for there were quite enough instances already on record; and were the Association to abstain from sending its representative, the result would be to throw the whole influence of architecture into the hands of South Kensington, and that nobody wished to see. The suggestion that the professional societies should nominate the professional jurors had been adopted by the Commissioners, and no feeling of pique should prevent the Association from sending a representative to serve on the jury.

Mr. Phene Spiers said the Association was placed in a very different position to the Institute with regard to the Commissioners. The Institute had a certain end in view, though to attain it they did not go exactly the right way to work. Failing in the attainment of their object, they, from a feeling of pique, refused to have anything to do with the Exhibition. The Association had no pique against the Commissioners, and he thought that in such a matter the Association was not in any way bound to second the movements of the Institute. He knew that there were a great number of members of the Institute who thought the action taken by that body was unwise. If they (the Association) were always to follow in the wake of the Institute they would soon come to the ground. It was to having taken their own course with regard to the management of the Association that they owed the position they had now attained. Mr. Roger Smith was one of the oldest and best friends of the Association, and, moreover, a man in whose judgment confidence could be placed, and he had great pleasure in seconding the nomination of that gentleman.

On being put, the original motion was carried by a large majority, and Mr. T. Roger Smith is therefore to be asked to undertake the office.

Election of Office-Bearers.

Messrs. Tasker and Salmon were then elected to serve as scrutineers of the voting papers for the election of office-bearers for session 1870-71, and upon their return to the room announced the following gentlemen to be elected:—

President.—Mr. Thos. H. Watson, A.R.I.B.A,

Vice-Presidents.—Messrs Rowland Plumbe F.R.I.B.A., and J. Douglass Mathews, A.R.I.B.A,

Committee.—Messrs. C. Aldridge, T. Batterbury, H. C. Boyes, J. E. Fogarty, E. C. Lee, T. E. Mundy, J. T. Perry, L. W. Ridge, R. P. Spiers and W. L. Spiers.

Hon. Treasurer.—Mr. J. Douglass Mathews

Hon. Solicitor.—Mr. Francis Truefitt.

Auditors.—Messrs. Edward D. Drury and A. W. Tanner.

Principal Librarian.—Mr. H. W. Lonsdale.

Assistant Librarians.—Messrs. W. L. Spiers and J. E. Flint.

Hon. Secretaries.—Messrs. John S. Quilter and Bowes A. Paice.

Registrar.—Mr. John S. Quilter.

Collector.—Mr. Edmund Marshall.

Destruction of Works of Art by the Police.

Mr. J. T. Perry then brought before the meeting the case of Henry Evans, who was convicted at the Middlesex Sessions, on the 18th of March last, of selling so-called indecent prints and photographs, and sentenced to two years' imprisonment, with hard labour, and a fine of £50. Mr. Perry said that the man Evans was well known to art students, and kept a little shop in Endell-street, Long-acre, where he had been in business for the past six years, during which time he had borne an excellent character. For many years he had acted in an official capacity for the Microscopical Society, and a principal part of his business has been to supply "life studies" to artists for artistic purposes. The photographic studies produced in evidence against him at the trial were made from the living model, and from well-known pictures. Such photographs were purchased by him in large quantities, and retailed by him at exceedingly low prices, contrary to the practice of dealers in indecent photographs properly so-called. The witnesses who appeared against him at the trial deposed that he told them that he only sold such things for artistic purposes. His case was about to be brought before the Home Secretary, and Mr. Perry asked for signatures to a petition to Mr. Bruce embodying the foregoing facts, and submitting that studies such as were to be procured at Evans's shop had become a necessity for art students, being less costly to them than the employment of life models, and that they were to be purchased in many places in London, though seldom well selected, and at much higher prices than those affixed to them at Evans's. It was also stated in the petition that the bulk of the studies which brought the accused under condemnation were studies bearing the stamp and sold under the sanction of the *Ecole des Beaux Arts* of Paris, and that studies in oil by students of the Life School of our own Royal Academy were also seized and condemned. More than this, a set of small etchings, studies by the famous artist Anibal Caracei, have been burned by the police. At the time of his arrest Mr. Evans was in treaty with the authorities of the British Museum for the sale of this collection to the nation. In consideration of these facts, in conjunction with the delicate state of Evans's health, the petition asked for a mitigation of the sentence.

Mr. Phene Spiers said he knew the man and his shop well, and had often purchased photographs there. At the Academy *soiree* the other night he heard several of the Academicians and Associates complain bitterly that the police could not distinguish between the scamps of Holywell-street and those who render service to art.

The Chairman could quite understand that policemen of ordinary education would not know the difference between that which was artistic and that which was indecent, and until we could employ men of art education as policemen he was afraid there was no security against valuable works of art being destroyed by them in their zeal for public morality. However, it was the duty of all engaged in art pursuits to endeavour to get this man out of difficulty, and he therefore hoped the petition would be numerously signed.

Mr. J. Douglass Mathews then read a paper prepared by Mr. G. H. Birch (who was absent owing to illness), entitled "An Historical Description of the Charterhouse," but as this was almost entirely historical in character, and as many of the facts relative to the early history of the place were given by the Rev. Mackenzie E. C. Walcott in The Building News for March, 4 last, page 177 we need not further occupy our space with the subject.

The usual vote of thanks to the retiring officers having been carried with acclamation, this, the last meeting of the present session, terminated.

The annual dinner took place at the Talbot Hotel, Richmond, on Saturday last.

During the recess, books from the library may be exchanged every Friday, between ten and five o'clock, and on the evening of the last Friday in each month between seven and eight o'clock.

Arrangements are in progress for an architectural excursion to Lincoln and its neighbourhood, under the conduct of Edmund Sharpe, Esq., M.A. (author of "Sharpe's Parallels"), during the week commencing August 22nd, further particulars of which will be announced.

◆

THE DECORATION OF S. PAUL'S CATHEDRAL.

We desire to direct the attention of our readers to a public meeting to be held at the Mansion House next Wednesday (the 13th inst.), for the purpose of taking steps for carrying out the intentions of Sir Christopher Wren as to the internal decoration of his noble masterpiece. It will be in the remembrance of our readers that in the year 1858 Dr. Milman, the late Dean of S. Paul's, made certain proposals connected with the cathedral over which he presided. The one was to provide for special, and particularly evening, services under the dome; the other was to complete the decoration of the interior of the church. The former of these objects has been undoubtedly achieved; but the appeal on behalf of the ornamentation of the edifice has hitherto met with but an indifferent and partial recognition, and what should be a warm and resplendent sanctuary is still not only bald and cold, but in some respects repulsive.

It is not generally known that the vast property formerly belonging to S. Paul's, having been vested in the form of separate estates, has now lapsed to the Ecclesiastical Commissioners under the provisions of the 3rd and 4th Vic., c. 113, secs. 28 and 51. The revenues from this property amount to no less a sum than £90,000 a year. Had this money still remained at the disposal of the Chapter, there would have been no necessity for the appeal they have issued; but as it has been used to supply the spiritual wants of the whole kingdom, there can be no doubt that the country at large should subscribe towards the ornamentation of the only cathedral built by Protestant hands and money. The committee, in a document just issued, says:—

"The leading principle affirmed by all who have been consulted is this—To make Sir Christopher Wren's intentions for the completion and decoration of the Cathedral the main text, as it were, and to study to carry out as implicitly as possible whatever he may have expressed in drawing, model, or writing; and, where these materials for guidance fail, that harmony is to be sought for to the fullest practicable extent with what he has proposed or done.

"Sir Christopher Wren's views are consistent with the most magnificent ideas. We know that mosaic, painting, rich marbles, and sumptuous gilding entered largely into the calculation of what he thought was due to his design.

"One of his recorded conceptions, that of using the space under the dome for a vast auditory ere its value was almost neutralised by the close choir screen and central organ, forced upon him, has been completely realised. The object now proposed is the other, that of rendering the interior of S. Paul's worthy of its unrivalled exterior.

Much, indeed, is needed to add unity and finish, as well as proper ecclesiastical character, to the existing arrangements for extended worship. But the committee are not disposed to weaken the claim which the Dean and Chapter clearly seem to have upon their alienated revenues for these legitimate purposes of public worship by again undertaking their charge. Their present appeal is solely for the achievement of that magnificence of ornament which they cannot doubt that London and England would desire, but which the Ecclesiastical Commissioners could not with any propriety be asked to furnish.

"Sir Christopher Wren's marble ciborium, or "altar-piece," as he called it, and a magnificent open choir screen—which, with its architecture, metal work, and sculpture, should be a very gem of art—would, however, naturally fall to the part of the committee.

"The better to illustrate the idea of the magnificence which has been imagined, let the entrance be supposed at the west end, about to become the easiest access to the Cathedral. On passing through bronze doors richly charged with devices, the first most striking effect would be produced by the brilliant roof covered with mosaic patterns and rich with gold. The cupola immediately overhead, 40ft. in diameter, and the panels of the exquisite side chapels, would be pictorially treated in the same material. The walls relieved with marble slabs and marble inlay; the pavement also and the windows, enriched with colour, must be so treated as to preserve a due regard for breadth of effect and the necessity in S. Paul's for a large amount of unobstructed sunlight. All panels to be filled with coloured marbles or sculpture, and no niche to be without its statue. The nave and transepts must, however, be in some respects subordinate to the choir.

"In the great dome, which has been happily called the very 'essence of the building,' the *grisaille* pictures of Sir James Thornhill cannot fail, ultimately, to give place to Sir C. Wren's cherished wish for mosaic pictures, and, in addition to these the drum and the eight spandrels (the latter already commenced in mosaic) will afford grand scope for the highest efforts of art and magnificence.

"The roof of the choir should be a splendid and impressive work in mosaic, elaborate while massive, and dignified in general effect surpassing the richness of the rest of the church. The windows in the apse will here also be more fully coloured; and the marbles, whether used structurally, as replacing the stonework of the principal pilasters, or in panels and inlaid patterns on the walls and pavement, would all be arranged so as to impart a fuller idea of sumptuousness. This must be especially the case with the ciborium and the choir screen already referred to.

"It would be the aim of the promoters of this work to make it the occasion of educating and advancing public feeling in the application of the noblest and most beautiful products of human intelligence and skill to sacred things, and for the advancement of national art. It would be their desire to prefer what would be calculated to give religious dignity and artistic value to the building to what is merely fanciful or ornamental merely as an ornament."

◆

S. SWITHIN'S CHURCH, LINCOLN.

Mr. Christian's report on the late accident at S. Swithin's Church was presented to the vestry on Friday last. It is an elaborate inquiry into the causes of the failure of the pillars, which Mr. Christian believes to be as follows:—

1. The departure from the requirements of the drawings by increasing the numbers of the stones, and consequently of the beds in the shafts of the pillars.

2. Imperfection of working in the beds of the stones, and imperfection and insufficiency in thickness of the mortar joints between them.

3. The racking of the heavy walls which the pillars support, each 107 feet long and 40 feet high, disconnected at each end, and left entirely without lateral stay or support, caused by the violent gales of last autumn, and other like causes before incidentally referred to.

As to the liabilities involved:—

As regards the Architect:—1st. I am clearly of opinion that in respect of constructive design, whether as shown by the drawings, or described by specification; whether as to quantity or description of material; the provisions made by him are in every respect sufficient for sound and durable construction.

2nd. That the omission from the specification of all provision for temporary supports whilst building, especially under the circumstances under which this church was erected, was undoubtedly an oversight, but one that, had the work been entrusted to a contractor of ample means, plant, and experience, would probably have been met by his own provision for temporary insurance.

3rd. That having made careful drawings, showing the exact number of stones to be placed in each pillar, he should have required the contractor so to execute them, and not have allowed any deviation from his instructions.

4th. That although thereby his responsibility was shared, and in part removed, he should not have allowed the contract so to be framed as to invest the committee with equal authority to his own in respect of approval and direction of the work, nor should he have submitted, except under written protest, to the instruction that he was not to visit and inspect the progress of work, unless he was sent for by you.

As regards the Contractor:—I am of opinion that he has incurred responsibility, 1st, in constructing the pillars with a larger number of stones, and consequently of beds, than are shown by the drawings.

2nd. By insufficient care in working the stones, and in forming perfect beds between them of sufficient thickness; and,

3rd, by neglecting to take any precaution whatever for securing the arcade walls during erection, he being bound by contract to make good all damages arising from "storm or tempest," and to deliver up the building when complete, "free from all flaws, cracks, settlements, or other defects."

And I am further and clearly of opinion that the defects which have occurred result from these deviations from the duty of a builder, and consequently that, excepting on the second point, as regards architect's liability, he alone is responsible for making them good."

◆

ANCIENT v. MODERN HOUSES.

Mr. C. J. Palmer, in the second part of his "Perlustration of Great Yarmouth," just published, says, in reference to the ancient houses of the town:—"The houses of the sixteenth and seventeenth centuries, with their fronts of cut flint or moulded bricks, barge-boarded gables, stone dressings, high-pitched roofs, rounded chimneys, ornamental ironwork, quaint external carvings, ample porches, large oblong and many-lighted windows, and latticed casements, had a much more striking and picturesque appearance than those of modern times. Many of these mansions remained intact until the close of the last century, when the rage for altering everything that was old set in. The fine old fronts were cased over with white bricks, then recently introduced; merchants' marks, tapestry irons, and other external ornaments disappeared; unmeaning and useless parapets were run up to hide high-pitched roofs and dormer windows; the old porches were removed, and modern 'porticos' substituted; and the house made to appear externally as if recently built. In the interior the wainscoting, tapestry, and leather work were torn down, or the fine old panels and sumptuous chimney-pieces were painted white. The folly of this is now generally admitted, and much would be given if what was so ruthlessly destroyed could be restored, for the fascination which clings to an old building can never be revived in a modern habitation. In bygone times, when a man built a house, it was a solid structure, with deep foundations, thick and firm walls, strong beam and rafters of enduring oak or chestnut, made to stand and to be used for generations. In such a house he would pass his life, and when he died it would descend to his children, until the family became extinct. Such houses are not built in towns at the present day."

◆

CARE OF BRUSHES.

Brushes used for applying finishing varnishes should be cared for with the utmost pains, as good work depends much upon the good condition of the brushes. The *Coachmakers' Monthly* suggests that a good way to keep them is to suspend them by the handles in a covered can, keeping the points at least half an inch from the bottom, and apart from each other. The can should be filled with slow drying varnish up to a line about a sixteenth of an inch above the bristles or hair. The can should then be kept in a close cupboard, or in a box fitted for the purpose. As wiping a brush on a sharp edge of tin will gradually split the bristles, cause them to curl backwards, and eventually ruin the brush, the top of the can should have a wire soldered along the edge of the tin turned over, in order to prevent injury. Finishing brushes should not be cleansed in turpentine, except in extreme cases. When taken from the can, prepare them for use by working them out in varnish, and before replacing them cleanse the handles and binding with turpentine.

◆

Name?—The *Rock* says an architect has issued a pamphlet in which he states his desire to build an immense national mausoleum. "The building is to contain space for the interment of 2,000,000 bodies; the style is to be Gothic, and for size and magnificence S. Paul's and S. Peter's at Rome will be to this new building as dwarfs are to a giant." (!)

LIBRARY
OF THE
UNIVERSITY OF ILLINOIS

The Altar Window Church of St. Peter.

AT HAMPTON LUCY,
WARWICKSHIRE.

DESIGNED BY
T. WILLEMENT F.S.A.

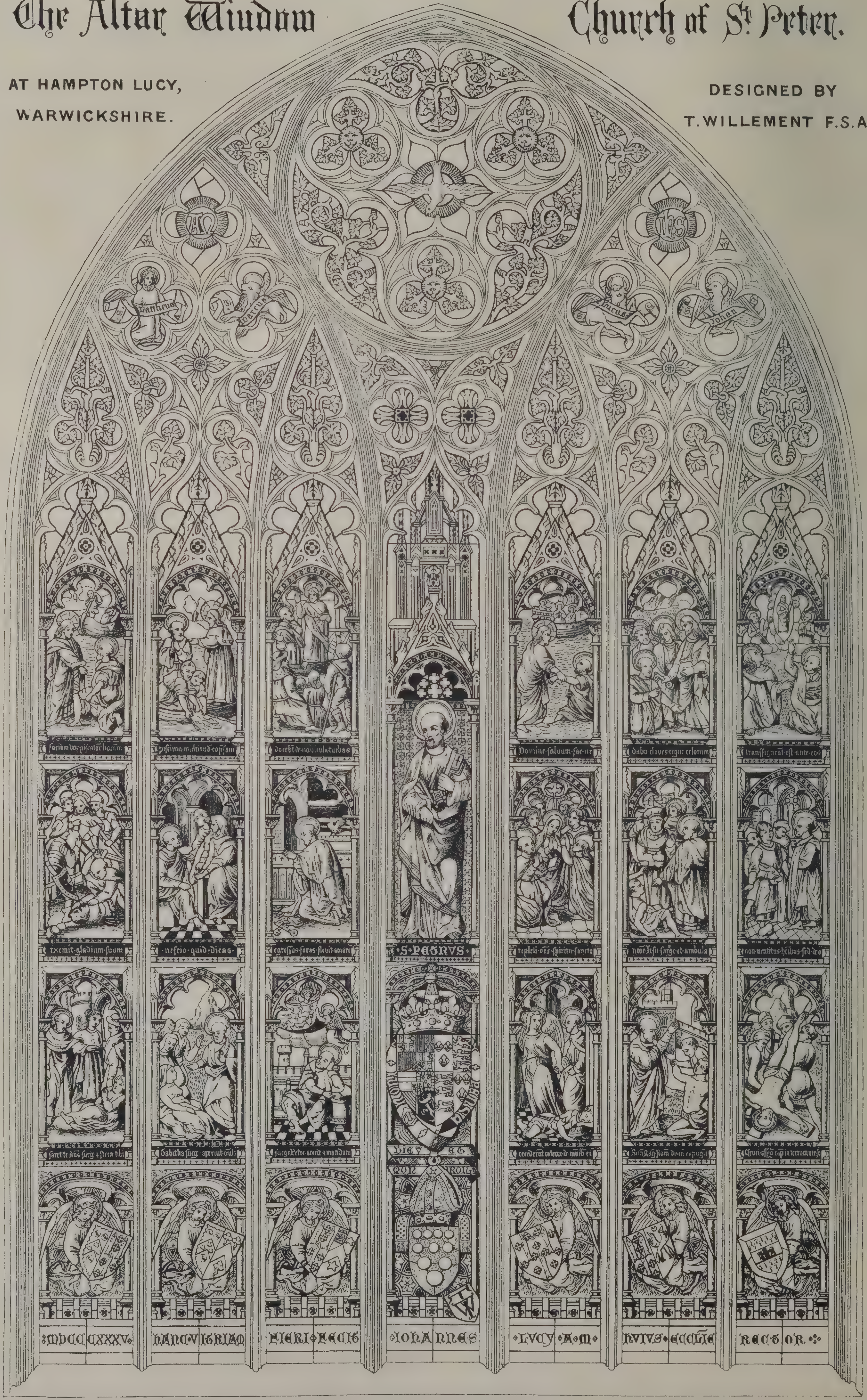
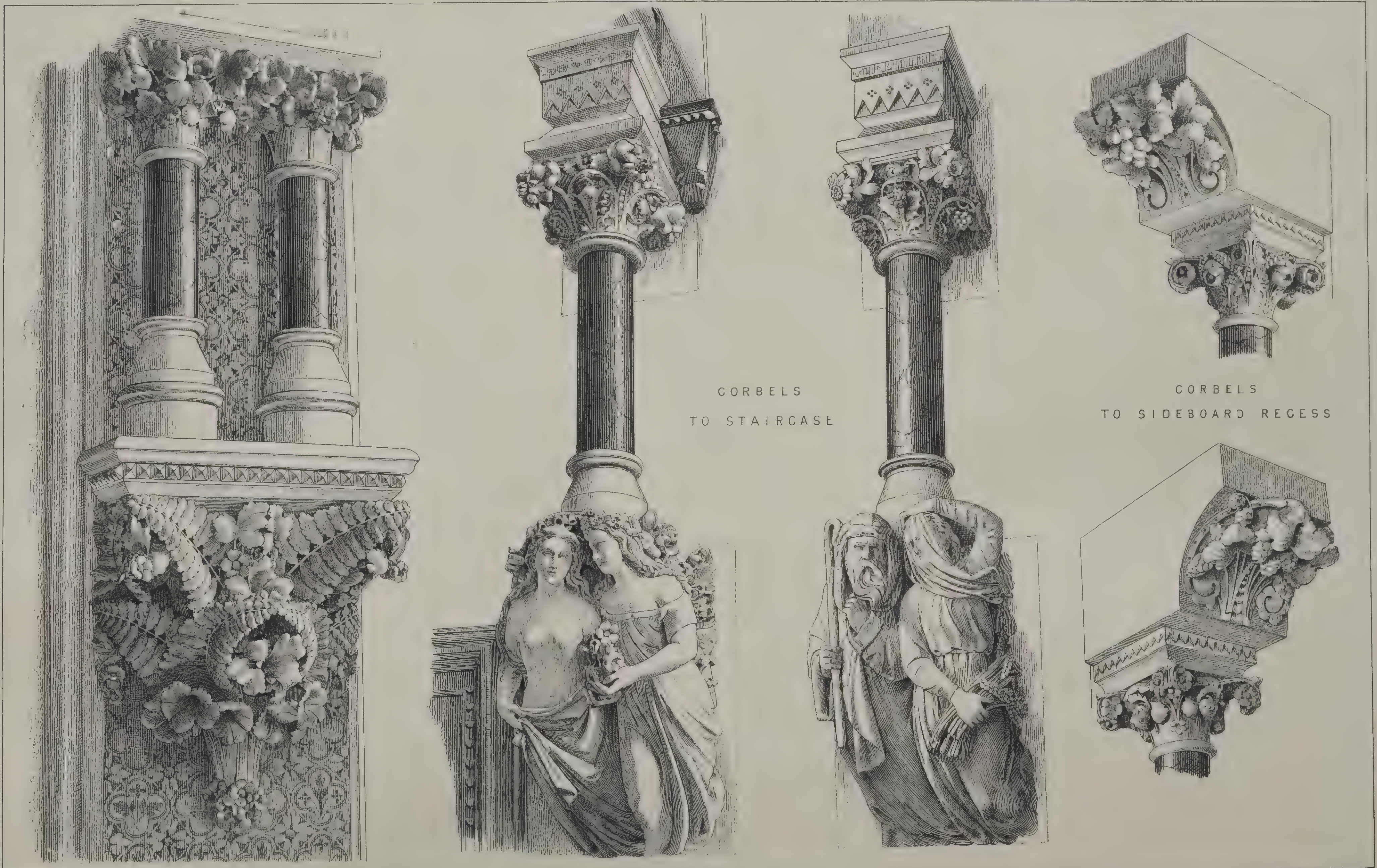

Matheus
Marcus
Lucas
Johan
faciam vos piscator homin
piscium multitud copiosam
docebat de navicula turbas
Domine salvum fac me
dabo claves regni celorum
transfigurat est ante eos
eximit gladium suum
nescio quid dicas
egressus foras flevit amare
S. PETRVS
repleti oes spiritu sancto
noie Jesu surge et ambula
non mentitus hoibus sed deo
sanat te dns surg et sterne tibi
habitis surg aperuit oculos
surge Petre occide et manduca
DIEV ET MON ROIT
ceciderunt coram te mortui et
Sim Mag Rom deum eduxit
cruci affixus cap in terram verso
MDCCCXXXV
HANC VITRIAM
FIERI FECIT
IOHANNES
LVCY A M
HVIVS ECCLIE
RECTOR

Photo-Lithographed by Whiteman & Bass, London



H Abbott, Lith.
Printed by Whiteman & Bass

Details · of · Residence · of · T. Middleton, _ Westholme, Cheltenham.

Building Materials, &c.

MOUNT SORREL GRANITE.

THE mention of granite must be a painful subject to the inhabitants of most large towns, and there can be but very few persons nowadays who have not at some time or other had cause to lament the discoveries of the famous Macadam. Granite as a material for road making is only too familiar to Londoners, and the periodical disturbances of some of our principal thoroughfares make us anything but agreeably conscious of its presence. The stone moslty used for this purpose in London comes from Guernsey, and is of a dark blue colour. Its hardness renders it extremely difficult to work, and its colour is against its employment except for this and similar purposes. Few probably are aware that in the heart of Leicestershire, and in the centre of the secondary formations, we have an outcrop of primary rocks, called by Professor Sedgwick "an outlying boulder." These rocks, constituting the table land of Leicestershire, are terminated at Mount Sorrel by a line of bold cliffs, forming a very noticeable feature to the west of the Midland Railway between Sileby and Barrow stations. This district is quarried for granite and slate at several places, all of them within a few miles of Leicester, the slate being very hard and difficult of cleavage, and the granite varying in colour from a deep red to a bluish grey I propose in the present paper to lay before your readers a few facts on the subject of granite working, collected during a stay of some weeks in the neighbourhood. The works at Mount Sorrel are on a very extensive scale, as will be gathered from the fact that they give employment to upwards of 600 men and boys. The granite is in the first instance dislodged by means of blasting with gunpowder. Deep holes are bored or jumped into the rock with an iron bar, and charged with powder, which is then exploded by means of a slow fuse. The blasts are so arranged as to be fired at meal times, when the men are away and out of danger, while a warning flag is then exhibited at the entrance of the quarries. A strong rope netting is occasionally fixed over the charge to intercept the flight of small pieces of rock, which are sometimes thrown off to a considerable distance, instances being on record of their having fallen in the village at the foot of the cliff. The chief trade of Mount Sorrel consists of setts or squared stones for paving or pitching roadways and pavement crossings, and broken stone or macadam for road-making. After the masses of rock have been detatched from the face of the working, and rolled down to the floor of the quarry, the large stones are reduced to a workable size by shotting them down, or splitting them up by small charges of powder of from two to three ounces in weight. The rough blocks are then wheeled across to the sheds of the squarers. These sheds or huts are arranged in rows, with their open sides towards the rocks, to facilitate the supply of stone. In each compartment are several boys working, under the guidance of a man. Often a family works together, the father and his children, who by a proper division of labour can work more economically than the same number of adults. The setts used in different parts of the country vary considerably in size. They are quoted by their dimensions in inches, as 3 × 6, 4 × 4. The first figure being always the smallest measure across the surface, and the second representing the depth the stone is inserted into the ground. The length of the sett is a variable one, but it should not as a rule be much greater than its depth. The stone after it has been shaped, is paid for and sold by weight. Most of the work at these quarries is done as piece-work, and under a former management it was usual to pay the men on a measured estimate of the amount of work they had got through. This gave rise to many abuses, and some of the workmen managed to get considerably overpaid. They contrived this by building up their stone heaps with hollows and empty paces in the middle of them. These, when they came to be measured, represented of course, a much larger tonnage than had actually been wrought, and the accounts of some of the workmen were thus very much overdrawn. This difficulty has now been removed by weighing weekly the work of each man, which work is loaded for this purpose in small trucks under the supervision of a foreman, and removed when weighed to a separate stoneyard belonging to the company, where the different sizes of setts are piled up in distinct heaps. The hammers used by the men engaged in squaring or shaping the granite are of several sizes. The largest and heaviest, which weighs about 28lb., is called a big burster ; it is square on one face and obtusely pointed on the other, and is used for splitting the irregular-shaped blocks into pieces of about the proper thickness for setts. The other sizes of hammers, varying from 28 to 2lb., are called as follows : Little burster, big chopper, little chopper, nobbing hammer, big sledge, little sledge, peck and hack, and squaring hammer. The lump of stone, after having been roughly chipped into shape is dressed over with a light hammer, the squaring hammer, and as a final process, to remove any small lumps or inequalities, the hammer called the peck and hack is used. This work is performed by boys, and as the result of each blow is a whitish bruise on the stone, the effect of the final dressing is commonly only a few white marks wherever the stone happens to be lumpy. Besides the regular shaped setts there are what are called randoms of about 4¼ by 5. These randoms are more carefully finished than the name implies, and are used for second class streets in many large towns, for stables, etc. To the northward of the works is a long bank of broken stone, where the men are engaged in hand-breaking. Most of the breakers are old and decrepit, and from this it may be inferred that this work commands a less rate of pay than squaring. The breakers employ a small short-handled hammer, and hold an iron ring in their left hand. This they use to rake out the lumps of stone on to the blocks on which they are broken. Stone is sometimes broken for road metal with a whip hammer. This is a light hammer, with a long pliable hazel handle, with which the workman hits the lumps as they lie upon the heap, and dispenses with the use of a block. The stone is broken nominally to pass through rings of a certain size, the common diameter being 2¼ inches. Macadam, who quarried for his famous roads at a pit still shown at Gruby near Leicester, is said to have fixed as a gauge for the size to which the stone was to be reduced the lump which it was possible for a man to put into his mouth. It would seem, when we look at the long line of men occupied in breaking, that the work could be as well done by machinery. This, however, is not entirely the case; nevertheless, a large quantity of stone is broken by steam power at Mount Sorrel. The company possesses two of Blake's stone-crushers, with which as much as 120 tons a day can be broken the size to pass through a 2¼in. ring. The shafts, jaws, and other portions of the machines have had from time to time to be strengthened and made heavier in order to resist the tremendous wear and tear of this hard granite. It seems still an open question whether Blake's machines or the toothed rollers turns out the broken granite in the best condition ; the former have certainly the disadvantage of producing a larger percentage of dust and small lumps, but the stone is more uniformly broken. The rollers, on the other hand will, I believe, do the work more cheaply, and the wear of the machinery is more regular. Perhaps the main evil of machinery is the quantity of dust and small stuff which it produces, but this is always screened out of the macadam, and commands a ready sale as granite gravel for making paths and drives. The counterbalancing good of machinery is that it tends to keep down prices and to check any attempt on the part of the men to combine against the company when work and orders press. In addition to these granite-breaking works there is a very complete range of shops where the railway trucks for the conveyance of the granite are manufactured, and where the hammers and tools for the men are turned out in large quantities. In a room adjoining the smiths' shops are stored upwards of twenty tons of hammer heads, and it is computed that about eleven tons of bars and hammers are constantly in use. From the works to the Midland Railway a line about a mile in length, crossing the river Soar by means of a magnificent brick arch, has been constructed by the company. There is also canal carriage by the Soar to all parts of the kingdom. On the banks of the canal an ingenious contrivance has been erected which deserves notice. It was formerly the practice to load the boats by bringing down truck loads of broken granite and tipping them over a high bank into the barges. When boats were waiting to load this was a work taking some considerable time. To obviate this evil a vast V-shaped hopper has been constructed, the bottom of which is furnished with iron doors or shutters. Into this hopper the truck loads of stone are shot, and when it is full a barge can be brought up and moored under the shoot, and filled in a very few minutes by opening the iron doors.

It is impossible in the limits of the present paper to say much about the methods of using granite in road-making. The numerous complaints about the roads during the last few years have brought this subject prominently before the public, and much has been said and written upon the best methods of dealing with the difficulty. As to the relative durability of paving and macadamising there can be no two opinions, for, making allowance for the great expense and trouble of pitching, and for its far greater first cost, when we estimate the frequency of repairs needed by the macadam, and the time and trouble required in the scraping and cleaning, the advantages of the former plan, especially when the traffic is heavy, are self-evident. The wear of the setts occurs chiefly at the sides and edges, causing the upper surface of the stones to become rounded, and in course of time almost conical. As this wear occurs in some stones more than in others, the face of the road becomes very uneven ; this gives rise to jolting of the vehicles which rapidly splinters the adjacent setts and, ruins the pitching. Directly a sett shows signs of wear it should be taken up and redressed *i.e.* the rounded surface knocked off and the stone laid down level with the surrounding surface. In macadamised town roads the increased width of the roadway and the altered character of the traffic does not tend so much as in the country to the production of ruts, but rather to the formation of depressions and irregular patches of loose granite. If these places are not quickly attended to, the evil goes on increasing, and the whole roadway is soon unfit for traffic. Road-mending is quite as important a consideration as road-making, and several papers have been recently published upon this subject, more especially having regard to the use of steam rollers for the purpose of consolidating the new metal. I think it is now generally admitted that rollers beyond 15 tons in weight are inexpedient. No end of mischief has been done with the 30-ton rollers in some places, such as crushing in cellars, gas and water pipes, and even sewers. After all, rolling is a very slovenly way of consolidating the macadam, and the bulk of the evidence goes to prove that excessive rolling does more harm than good, crushing and bruising the granite, and leading to the use of much more material than is absolutely necessary. The true way to mend roads is to put on as little stone as possible, and to consolidate it by means of hand ramming. I feel I cannot do better than give a wider circulation to a portion of the annual report of Mr. W. H. Wheeler, the surveyor of Boston, Lincolnshire, as, from his great experience and his practical knowledge of the subject, his observations carry especial value. After stating the fact that granite is by far the cheapest material that can be obtained, he says:—"From experiments made with one of Howard's dynamometers, I found that the traction on a road prepared with gravel in the usual way in winter time was 256lb. for a waggon with 3in. wheels loaded with stone, the total weight being 2 tons; whereas on the roads which had been repaired with granite for three or four years previously, the traction was only 108lb.; or, in other words, a horse can in bad weather draw on a granite road more than double the load that it can on one of the ordinary gravel roads of this district. In putting the new granite on the roads of this district, I have, instead of covering the whole surface with the broken stone, leaving it to be ground in with the wheels of the carts and the horses' feet, and for a time rendering the road almost impassible, adopted the system of filling up the ruts in winter time as fast as they are made. By this plan the period at which the whole surface of the road becomes hard is delayed, but at the same time it is never rendered unfit for traffic, and the stone becomes incorporated with the rest of the material without being crushed or broken, and in the end makes a better surface. Another point to which I have paid special attention has been the form of the surface and the drainage. By raising the sides when the road is too convex and forming proper water-tables, the road is kept much drier and firmer, and although it has taken a greater amount of labour at first, the cost will be more than repaid by the saving of material and the future cost of keeping the sides of the road free from grass and mud.

"Before concluding this report I cannot help referring to the practice which exists with the drivers of carts and waggons in this district, of keeping in exactly the same track, whereby the wear is all brought on the same part of the road instead of being equally distributed over the surface. This practice renders it extremely difficult, in fact, in wet weather almost impossible, to keep the road level. If the passing traffic were spread all over the road instead of being confined to one track, the cost of maintaining the roads would be very considerably reduced."

The accompanying table, which has been drawn up under the direction of Mr. C. H. B. Hambly, the Manager of the Mount Sorrel Granite Company, and which has not, I think, before been published, may be of use to some of your readers:—

SETTS.

Size.	1 ton will cover	Chiefly used for
Wide. Deep.	Square yards.	
2″ × 2″	10	Footpaths Crossings Stable yards
2½ × 2½	8	
2 × 3	7	
3 × 3	7	
3 × 4	5	Street paving quick traffic
3 × 5	4	
3 × 6	3¼	Highly dressed street paving
3 × 7	3 or 32 lin'l yds	
3 × 8	2½	
3½ × 6	3¼	Street paving
4 × 4	4¾	
4 × 5	3¾	
4 × 6	3¼	
4 × 7	3 or 25 lin'l yds	Street paving heavy traffic
4 × 8	2½	Heavy street traffic or channel stone
4 × 9	2¼ or 18 lin'l yds	
5 × 6	3¼	
6 × 8	2½	
Jacks	7½	Causeways and crossings
Randoms	5½	Railway goods' yards, Back streets, etc.

Kerb Stones.

Size.	Foot run to the ton.	
Wide. Deep.		
6 × 9	36 Rough	Edge stones.
5 × 10	40 Dressed	
6 × 12	38 ,,	
8 × 6	42 Gutter stone	
	Made also circular.	
12 × 6	28 Rough	Flat kerb and tram.
12 × 8	20 Dressed	
12 × 10	18 ,,	
15 × 10	14 ,,	

1 cubic yard of Mount Sorrel granite about two tons.

GILBERT R. REDGRAVE.

SCIENCE IN ARCHITECTURE.

By WM. PARSLOW.

(*Concluded from page* 13.)

MARBLE.

WITH reference to this material for lavatories, wall linings, chimney pieces, &c., it is surprising at first to observe the difference in prices of articles from different works. Chimney pieces, &c. sent over here direct from Belgium re, as a rule, much cheaper than those that can be bought from marble works of any standing in England; but the difference, as it appears to me, arises mainly from the less amount of labour bestowed upon the polishing. I have known frequent cases where chimney pieces brought direct from Belgium have had to be polished again within two years, and the expense of this second polishing necessarily makes the articles in the end very costly. Although I do not know the exact method of polishing adopted by the Belgians, it seems evident they depend more upon a quick dry polish and chemical process than the slow laboured style of our English marble masons. The English plan is to grind and form the surface of the marble by means of wet friction, which is much slower than dry, and does not injure the marble, while dry rubbing does, by making it softer; this process is repeated with three or four different stones in order, and then the surface is glossed with lead and felt. This genuine English plan is superseded in some marble works, and doubtless in Belgium, by dry rubbing—a quick process, but one destroying the hard surface of the stone. The glossing operation is then performed, not by rubbing with lead and felt, but by pouring on the marble some such chemical as spirits of salt. This is so strong, that when passed upon the marble it produces a hissing sound, and must necessarily soften the surface; it then receives a slight rubbing, which soon occasions a polish; but this may be detected from the genuine English polish by a peculiar deadness; in course of a few years this polish disappears and requires reviving; the true polish lasts for a generation with ordinary care.

This chemical wash, but without the dry rubbing, is the English mode for polishing carved work; the ordinary rubbing would destroy the spirit of carved marble work; it is therefore simply tooled, or, at other times, sanded, and then washed with spirits of salts; the consequence is, all English carved marble work has rather a dead look, but this is not objectionable; it soils in the course of a year or two, but may be restored by a washing of American potash or chloride of lime. The Italian marbles, as they are called, most generally used in England, are the black and gold, the dove, Bardilla, which is like black and gold, but inferior, also the statuary, the vein, and Sicilian. Lately, the Irish marbles have been freely used in England; there are four sorts, red, green, black and the fossil, a dark colour. Of the Belgian marbles, the St. Anne's must be classed among the best. The Belgian black is a very inferior article, and not equal to our common Derby black. All marbles are more or less rotten, that is, they are composed of so many parts that they have a tendency to come to pieces; the more beautifully they are marked, the more rotten they are; the various marks show the junctures or formations in the marble that produces this quality. For this reason, marble, if intended to be worked as a pillar and to bear a weight, must be carefully erected; if out of the perpendicular, and supporting much weight, it is liable to snap at some of these formations. The black and gold marble, though one of the most beautiful, is one of the most rotten, and when polished is exceedingly susceptible to scratches and snips. The Italian dove and the Belgian S. Anne's are the most durable dark marbles. The Italian statuary, though a very beautiful marble, is soft. The vein and Sicilian are more durable, and will consequently resist dust better. The Irish marbles are equal to the Italian in quality; but they are less expensive on account of the cheapness of Irish labour.

Inferior marbles may be told by blotches and other faults, and, by being soft, they will not bear a fine angle. In less than a month after working, inferior light-coloured marble work will look black at the corners, which blackness cannot be wiped off. In good hard marble-work any such soiling will wipe off. Dark-coloured marbles are very rarely soft.

LIVERPOOL MASONRY.

As a rule, the white sandstones about Liverpool are not hard enough for steps; they stand the weather well, and harden with exposure, but they do not answer for any hard wear. A crust forms upon the stones by exposure so hard as to make a difficulty in using the chisel; but this crust is continually wearing off when these stones are walked upon; they answer well for cills and weatherings, but not for steps. The white Woolton is the principal exception to this rule. The red sandstones are generally hard, and have good wearing qualities. The Runcorn stone is mostly soft, and the red sandstone steps that wear out so quickly are generally from that locality. The Tranmere and Woolton red stones are the hardest. The damp that may frequently be seen under stone cills in new buildings does not necessarily arise from bad workmanship; it generally results from the skin of the stone having been taken off by working, causing the water to find its way through the cill stone to the wall underneath; in course of time, as the hard skin grows on the stone again with exposure, this damp will disappear. The difficulty of damp passing through window cills may often be remedied by giving the top two or three coats of good oil paint. A hard skin cannot grow on the cills while servant girls are allowed to rub them continually with red sandstone.

The red granite from the Isle of Mull, and the grey granite from Dalbeatie, may be safely specified for good work in Liverpool, while for monuments and other sculptured work the white manganese limestone has hitherto proved the best.

TIMBER.

With reference to the timbers used in this neighbourhood, spruce from S. John's or Quebec is good bearing timber, but when it does give it breaks clean; it snaps off very short. The fibre of the wood is short. Spruce curves and twists very much, and often the cracks we see in plaster ceilings are to be attributed to the twisting of the joists and spars, and are not the plasterer's fault. On the Eastern coast, Baltic timber has hitherto been used for the purposes for which we use spruce, and now, on account of increased facilities for importing Baltic timber, it is becoming more generally used in Liverpool. Baltic red pine is one of our best bearing timbers, and stands the weather well when used for outside purposes; its fibre is long, and it will bend rather than break quickly. Pitch pine, besides being most useful for finishings, is good for outside purposes, and stands the weather well, but occasionally the hot sun will bring out the resin, which runs down the wood, taking the paint with it; this makes it less desirable, on the whole, for outside purposes than red pine. Baltic white is a very nice wood, and looks well in floors; it is not so good for bearing purposes as the red; the knots in the white are often what are called pin knots, small and black; they dry and drop out. The knots in the red are larger but sound. Baltic timber is often disfigured by a redundancy of knots; these do not militate against the wood, and often would not appear if the logs were cut up with judgment. A skilful workman can so cut through the knots that they do not show, simply by studying the way they run, and cutting through the feather of them.

Quebec is a superior yellow pine to that from S. John's; in the rough it is clearer, and when cut up is finer looking. If a piece of S. John's yellow pine be rubbed it will occasion a very fleecy surface; that from Quebec has less of this quality, and is often free from it altogether. Good S. John's and Quebec, however cannot be distinguished by any but experienced judges.

The best Spanish mahogany to specify is that obtained from the city of S. Domingo; this is the most beautifully marked. That from the country of S. Domingo is an inferior sort. The Bastard mahogany and the Bay wood are also inferior sorts. The Bay wood, of which we make such use, comes from the Mexican coast.

In French-polishing mahogany, polishers, if not well watched, will often lay a ground of red lead, whiting, and plaster of Paris, then polish on top of this; this makes the work easy, which is otherwise very laborious. It, however, hides a great deal of the ornamental figure, and the polish quickly disappears. If ever this process is detected, the best plan is to have the whole taken off with American potash, and start afresh. Fine polishing is accomplished only by means of laborious rubbing with the different French gums in their proper order, and gradually the whole figuring on the wood becomes developed.

A peculiarity of the poplar wood, that makes it suitable for special purposes is that it will not burn; it only smoulders.

In practical joiners' work a great difficulty with men is to get them to bore their work before nailing it. I refer principally to framing, and fixing mouldings. It is a little more trouble to bore first, and if men are not constantly reminded, they will neglect this in good joiners' work as well as in common. If there is no bore made first, there is a great tendency for the nail to slip off the stile into the panel, and the result is, if the panel shrinks at all, it takes the moulding with it and leaves a slovenly finish.

Extra attention is becoming necessary to these particulars, for, according to appearances, it is probable the principal work for joiners will eventually be fitting, since all work may in course of time be made by machinery.

At present English machine work is not of that finish that will admit of its being used universally, but most of the foreign work has a very fine finish, and there is no doubt English machinists will before long be able to equal if not surpass this, and then I cannot see what objection there will be to machine work generally. At the present time the cost of machine work is not reduced to what it might be; so much of the tree has to be cut up before a proper grain for machine work is obtained that considerable waste results. When this difficulty is better understood, and the portions of the timber that cannot be adapted to machine work more successfully utilised, then the cost will necessarily be reduced. The portions of the tree where the branches unite, causing a cross grain, interfere now with the successful working of the machines, and occasion the waste.

Of those portions of joiners' work that cannot at any time be made cheaper by machinery, the rebated sashes are a good illustration. Although these are frequently made by the machine, the result is not satisfactory; being run in long lengths they do not cut well for morticing, and there must be a considerable amount of piecing before they are completed; this makes them almost as costly as handmade work, and not so satisfactory.

IRONWORK.

Architects often specify the cold blast iron, and do not get it. The same with the Low Moor iron. The Low Moor iron from this county is the best wrought iron we can get; it is an extremely expensive material, being very hard to work; the expense per ton wrought is double the expense of iron wrought from Sheffield, Warrington, the Clyde, or any of the ordinary black countries. I do not think it wise to specify Low Moor in the ordinary way; instead of £24 per ton we may be charged £50, and after all not get what we pay for. For most purposes ordinary iron will answer equally with Low Moor, if a little thicker material is used; but where small size is required and great wearing power, of course Low Moor is best. In bolts, for instance, that do not wear much, if 1in. of Low Moor iron be strong enough, then make them of ordinary iron 1¼in. thick. By specifying these you save the extra charge, besides avoiding the risk of having 1in. bolts of ordinary iron put into the work, which might prove too weak. Low Moor iron is more malleable and tougher than the other; it has long fibres; the difficulty in severing it is the best means of testing it; its parts have to be literally dragged asunder. Cold blast iron from the various depots in Wales is the best class of cast iron; and as it is difficult to drag the Low Moor into pieces, so it is difficult to break this. I have myself broken ordinary pig with one blow from the hammer, but cold blast iron will sometimes bear twenty blows from a smith without breaking. The difference between cold blast and ordinary cast iron is more easily seen than that between Low Moor and ordinary wrought iron. When cold blast is placed besides common iron it has a bright look, while the common has a dull, dead appearance. But as a rule it takes experienced men to detect these metals from the common iron; it is, therefore, well when they are required for special purposes to specify an amount for them, and take special means to get the work done.

IRONMONGERY.

The numerous qualities of ironmongery fittings necessitate the most careful attention on the part of the architect. As a rule, good class ironmongery may be told by its finish; if the finish of an article is workmanlike and satisfactory, it may generally be concluded that the hidden portion is good; but if there is a rough and uneven finish, a tendency to snip and get out of order, then it is well for the architect to pay attention to the hidden work, as the article is not likely to be first class. Common sash fasteners, having an effective appearance, often surprise the houseowner by breaking off when more than ordinary pressure is applied; an examination will usually show these to be of hollow metal instead of solid. If we specify solid articles, and see that we get them, we may be generally assured that the rest of the work is good. In order to secure good locks, bell pulls, or door furniture, the best plan is to allow a price and arrange specially for the purchase of these articles. Handles coming off is a constant source of annoyance to houseowners, and they take for granted when this occurs the furniture must be jerry, whereas the best furniture is liable to this difficulty, and unless Pitt's or Walker's patents are used, I do not see how, with present appliances, the evil can be altogether avoided.

Bellhanging is of ten a source of trouble to the architect. No. 16 copper wire is a good strength, but difference of opinion exists on this point. Fault is sometimes found with the putting two or three wires in one tube; this need be no drawback; the difficulty is when the tubes in which the wires are put is too small; a ⅜in. tube, or even a ½in. tube, will admit of three or four wires working satisfactorily. The cause of bells ceasing to ring properly a few months after the building of a house is often very excusable, though the circumstance in some minds stamps the work as bad. The bells having been put in while the materials of the house are in a green state, they are liable to rust, and in some localities more than in others. The iron portion of the crank rusts and loosens the wires. These, therefore, require a little attention when this occurs, which good bellhangers are willing to give; indeed it is well to require bellhangers always to keep their work in order for six months.

GASFITTING.

A fruitful source of jumping in gas, when there are not the usual irregularities of defective workmanship, is the following :—¼in. piping is fixed instead of ⅜in. or wider, the consequence is, when the gas passes through the pipe of the kitchen or other warm apartments it becomes rarefied; it then ascends to the colder apartments, and through having been heated, is condensed into water; it then by its own weight falls down the pipe. If the pipe were wide enough, say ⅜in. or ⅓in, then the volume of water thus formed would, because of its own weight, have sufficient power to pass through the pipe to the proper syphon or meter, where it could be let off at will; but the pipe being only ¼in., the volume of water thus formed has not sufficient weight to make its own way down the pipe, and the force of the gas coming up is sufficiently strong to show a balance of power, the gas pressing upwards and the water downwards proving in turn the stronger.

On account of this tendency in gas to become rarefied in warm apartments, and the more easily condensed into water afterwards, a meter ought never to be placed in a kitchen or other such like place; the colder the apartment the better; the pipe ought never to be less than ⅜in. for the reason named, and even this size without a good fall is liable to occasion jumping. All gas is liable to form into water, and as it passes through cold regions it invariably does so to some extent. for this reason large syphons are provided in the streets, and a great deal of water may be seen taken from them at times, being merely condensed gas. All gas is liable to frieze; on being made it passes through water; hence it is damp to begin with. Frozen gas need offer no serious difficulty, if the pipes are large enough, and have a good fall to a syphon. By the application of warmth it will melt into water, and then pass away.

Similar notes upon the remaining branches of an architect's specification will constitute the second part of this paper.

◆

ALTAR WINDOW, S. PETER'S, HAMPTON LUCY.

CONSIDERABLE alterations have been made in the Church of S. Peter, Hampton-Lucy, since the altar window which we illustrate was erected. Instead of the former altar window, Mr. G. G. Scott has built a beautiful apse with five large windows, which contain all the subjects and coats of arms which occupied the window shown, the intermediate space being filled with glass. The whole character of the church, is indeed, greatly altered since Rickman's day. The stained glass window, in its original state, was presented to the church by the present rector, the Rev. J Lucy, M.A., and was designed and executed by Mr. Thomas Willement, of London, F.S.A.

In the compartments of the tracery within the arched head of the window are introduced the A Ω I. H. S., and the Dove, as indicative of the three Persons of the Blessed Trinity; and also the Angel, Lion, Calf, and Eagle, as the emblems of the Holy Evangelists. The remaining divisions are occupied by foliage ornaments. In the centre opening of the lower part of the window, under a rich Gothic canopy, stands the whole-length figure of S. Peter, to whom the Church is dedicated, the pedestal being inscribed with his name.

Immediately beneath this figure are placed the impaled arms of King Philip and Queen Mary, by whom the advowson of the rectory was given to Thomas Lucy of Charlecote, Esq., afterwards knighted by Queen Elizabeth. Below these, beneath a mitre, are the arms of the diocese of Worcester. The three openings on the right and the three on the left are occupied by eighteen compartments, each beneath a Gothic arch, the upper six having pedimental canopies, containing the principal events in the history of the patron Saint. The lower range beneath these subjects consist of six compartments, each containing the figure of an angel holding a shield of arms.

◆

DOMESTIC HYGIENE.—THE KITCHEN RANGE.

AMONGST all the fittings of a domestic residence, it may fairly be asserted that none are so important to the comfort of the inmates, or at times more conducive to their discomfort, than the means and appliances employed for warming the building. What more delightful than the winter fireside of a country house? or more miserable than a smoky chimney? The whole subject of fireplaces, chimneys, and fuel, is indeed, so far as the householder is concerned, all one, though it requires to be considered under several heads; we shall also show, in due course, that economy and the healthiness of a household are intimately connected with the same question. As, however, it would be impossible to treat on the several heads enumerated above in one article, we propose first of all, after a few introductory remarks on chimneys, to devote our attention to the kitchen range, as being unquestionably the most important fireplace in any house.

Now the use of chimneys being, primarily, to carry away the products of combustion; and secondarily, for purposes of ventilation, the subject must be considered in both these lights. With the huge wood fires of our ancestors, the large hearth recess and the capacious flue did not interfere with the accomplishment of the object proposed; but when fireplaces were introduced into small rooms, and coal was substituted for wood, the arrangements which were suited for the baronial hall or kitchen did not apply. Five hundred years of experience in chimney construction does not appear to have resulted in the deduction of scientific rules for their apportionment, so far as houses are concerned. In this respect architects have unquestionably been left far behind by engineers, who, when they desire to erect a chimney shaft for a factory or steam engine, carefully apportion the dimensions of the structure for the work which it has to perform; it is, however, too often the case that flues in houses are constructed of the same sectional area, whether they be twenty or fifty feet in height; whereas dimensions that may be suited for the one height are perfectly inappropriate for the other. One consequence of this is the disfigurement of buildings by the addition of chimney pots, for the purpose of contracting the orifice of a flue which has been constructed too large for the duty it has to perform. Defects arising from this cause are too often attributed to the position of doors or windows; whereas the real reason of their existence is assignable solely to the entire absence of any calculation for determining their proper proportions. Something, it is true, may be said with regard to the setting of fireplaces, as well as to their construction; but we do not purpose to enter into this question in the present article.

Perhaps one of the greatest treats that a cook could enjoy is to be served with a dinner cooked by some one else. The reason of this is that the constant smell of cooking nauseates the stomach, making it, by the sympathetic action of the several nerves of the system, disinclined to receive what it has so long anticipated through the action of the senses. Similarly, also, the mistress of household enjoys nothing better than to get some one else to superintend the ordering of her several meals. But if this is caused, to a certain extent, by a mere knowledge of what is coming, how much more must it be the case when the smell of cooking—as too often occurs—pervades the house as well as the kitchen; and in some instances the smell of dinner will be perceivable in other parts of the house to a greater extent than in the kitchen. To a delicate person this is sufficient to entirely destroy the appetite, and it is due solely to defective construction. The cook is too often blamed when the architect is in error; and while few know where to assign the fault, fewer still know how to remedy it; but it may be taken for granted that the evil will not disappear from amongst us until the art of house construction is based upon a more scientific principle than it has hitherto attained. Art and decoration, and the convenient arrangement of accommodation, occupy, in the present day, far too much of the consideration of the architect; whilst sanitary arrangements are neglected, and the healthfulness of buildings suffers in consequence.

In order to arrive at a true appreciation of the causes that lead to the kitchen being a nuisance in the house, instead of, as it should be, the means of imparting pleasure and comfort, we must consider first, what is a smell, and how it is conveyed. A smell then—and here we are referring, it will be understood, to a smell that ought not to exist—is matter in a wrong place, and consequently it is *dirt;* and not only is the smell of cooking when it pervades a house, dirt in a scientific sense, but it so absolutely. The smells arising from cooking cousists of minute particles given out from food of all kinds, owing to the partial chemical decomposition which takes place during the application of heat, and which are carried off and mixed with the surrounding air by the steam, or other vapours arising therefrom. With a properly-constructed kitchen range and flue, these will all be conveyed up the chimney, and carried away into the atmosphere above the house. In such case they are harmless, and become immediately, so to say, deodorised, by admixture with a preponderating amount of atmospheric air. When, however, they are permitted to escape into the house, they do not meet with a sufficient quantity of air to render them innocuous; and, upon condensation of the vapours by which they are conveyed, they will settle upon the interior walls, and gradually cover them with a coating of grease and vegetable matter. These, if not constantly removed, will accumulate, and in time decompose, giving off still more objectionable and unhealthy smells, but which are not so noticeable, in consequence of the more powerful odour arising from a continuance of that evil from which they first had their origin.

It will repeatedly be found that the smell of cooking is strong in other parts of the house, and especially upon the floor immediately above the kitchen, whilst the kitchen itself is apparently free, or almost so—from the inconvenience; and the reason of this is, upon a little consideration, made perfectly clear and intelligible. We shall endeavour, in our next article, to explain the cause and then point to the remedy; for to whatever extent the evil may exist, its modification—if not its entire remedy—is simple, however defective the kitchen chimney and range may originally be. —F. C. Danvers, *in the Food Journal.*

THE PRESERVATION OF ANTIQUITIES.

DURING the visit of a party of archæologists to Silchester the other day, mention was made of Lord Romilly's desire to pass an Act of Parliament for the maintenance of our national antiquities ; it seems that in many cases the owners of the soil are unable to prevent their destruction, or utterly careless about it. There has recently been a correspondence in the *Times*, too, complaining of the desecration of ancient memorials in the village of Dorchester, 9 miles from Oxford. It was stated at Silchester that Stonehenge is greatly injured by parties who make fires under the massive megaliths, and knock off fragments of stone as curiosities. Now Stonehenge, which a contemporary takes to have been a royal palace in days before either Iberians or Celts trod the soil of this island—the palace of a perished race and an extinct civilisation—is probably the most mysterious and the most durable monument on the face of the earth. Petra—

> That rose-red city, half as old as time—

is modern in comparison with it ; and it will be scarcely altered, if the vandals are warned off, in days when the great cathedral of Sarum will be a grass-grown mound, and when not a landmark will exist to show the irrepressible New Zealander where stood Sir Charles Barry's triumph of confectioners' Gothic. It is to be hoped Lord Romilly will bring in his Act, and the earlier the bette.r

VENTILATION OF HOSPITALS.

A COMMITTEE of the Paris Academy of Sciences is now considering this very important subject, and a communication from M. Cornill Wœystin has just been presented and referred to this committee. M. Wœystin criticises the present method of ventilation of hospitals, and asks how it is that while certain doctors assert that a supply of eight to ten cubic metres of air per bed and per hour are sufficient to keep a ward in good conditions of ventilation, others insist upon a supply of twenty, and even sixty, cubic metres, while some even fix eighty as the minimum quantity. He accounts for these immense discrepancies in the following manner :—In a ward containing, say, ten beds, the warm air is introduced between two ranks of beds by means of five orifices in the cent a passage while the vitiated air is drawn off through other orifices behind the beds. Thus, says M. Wœystin, a number of currents are formed from the inlets to the exit passages, which do not sufficiently draw away the intermediate layers of air, and thus cause many regions or currents of air not sufficiently ventilated, which become veritable reservoirs of infection ; and this he believes to be the true reason of the increasing demand for a larger amount of fresh air. The introduction of a greater quantity of fresh air, according to M. Wœystin, only increases the rapidity of the currents, and has little effect upon the strata of air which lie above and round them, between the inlets and the ports of evacuation ; the object, therefore, should be, not to introduce masses of air, but to make better use of that which is admitted. To remedy this, M. Wœystin suggests the application of a well-known system—that of wire-work, or gauze ; he recommends that the orifices for the introduction of fresh air should be covered by such a screen, reaching from the floor to the ceiliug, and that the exit holes should be protected in like manner, so that the movement of the air should be graduated and dispersed over the entire contents of the ward. The importance of this question cannot be overrated ; all the world knows what relief has been obtained of late years in the case of fevers by a free use of fresh air, and the subject has been tested in a very remarkable manner in France, both in towns and in camps ; patients have been placed under tents where the supply of fresh air was constant, and the temperature low, with an amount of success that gives immense importance to such experiments. It must not be forgotten, however, that draughts do not supply wholesome ventilation ; and the shutting off, or rather the attenuation of them, must conduce to the comfort and well-being of the sick.—*G. W. Yapp.*

ARCHÆOLOGICAL.

Discovery of a Roman Tesselated Pavement.—At Oldcoates, on the site of the Manor yard, has been excavated a Roman tesselated pavement, remarkably perfect. The tesseræ, which are of limestone and red sandstone, are half an inch square, and are set in cement with great skill so as to form diamonds and circles. Some Roman tiles have also been found.

Prehistoric Remains of Dartmoor.—Mr. C. Spence has presented an interesting report to the Ethnological Society on the Prehistoric Remains of Dartmoor, detailing the numerous stone circles, avenues, menhirs, cromlechs, cairns, &c., and suggesting that the stones in some avenues may have been added in commemmoration of persons of distinction. The granite blocks in some of the cromlechs appear to have been wantonly destroyed.

Discovery of Extensive Ancient Mines in the Eastern Counties.—For more than two years, at intervals, the Rev. Canon Greenwell, of Durham, has been conducting a series of investigations as to the nature of a large group of circular pits situate near the town of Brandon, in the Valley of the Ouse. The pits in question are known as the "Grimes Graves," and the country around them abounds upon the surface in flint implements and flakes, and most numerously near the pits or "graves." The "graves" have, in fact, proved to be the shafts (in which the filling-in materials have settled) of extensive underground flint mines, to which the shafts are upwards of 200 in number, and generally about 25ft. apart. The old shafts appear to have been successively filled up by the *debris* from the new ones throughout the group, which having settled, they now present the appearance of bowl-shaped depressions, about 4ft. deep, and have been variously regarded as graves, villages, &c. The laborious work of sinking the shafts, excavating the galleries, and getting up the flint had been done by picks made of the antlers of the red deer, of a larger species than that now found in Scotland. Throughout the workings only one stone hammer was found, and that of basalt. The marks made by it could be fitted on the sides of the chalk walls, and pick marks were abundant everywhere.

Royal Archæological Institute.—The annual meeting of the Royal Archæological Institute of Great Britain and Ireland will be held at Leicester at the end of the present month. The meeting is under the patronage of Her Majesty and the Prince of Wales, and Lord Talbot de Malahide, F.S.A., is the president for the year. Leicester itself possesses many features of archæological interest. These include its mediæval churches, the Norman hall of its ancient castle, the "newarke" of the castle, numerous Roman pavements, one being *in situ*, and the noted mass of Roman masonry called the "Jewry Wall," the ancient hall of Corpus Christi Guild, the chapel of Trinity Hospital, and the now forsaken hospital of Sir William de Wyggeston. With these may be mentioned the site of Leicester Abbey, surrounded with its original walls, where Cardinal Wolsey breathed his last. Among the features of interest which will be included in the proceedings of the week will be the inspection of Kirby Muxloe Castle, Ashby-de-la-Zouch Castle, the ruins in Bradgate-park, so intimately connected with Lady Jane Grey, the remains of Ulverscroft Priory, the curious stained glass of Woodhouse Chapel, the house known as Latimer's at Thurcaston, the noble church at Melton Mowbray, the fine Norman hall at Oakham, the interesting hall and church at Exton, and the remarkable encampment at Barrow-on-the-Hill. A temporary museum will be established, as usual, during the week, and will include a collection of portraits of worthies connected with the counties of Leicester and Rutland.

PARLIAMENTARY NOTES.

New Home and Colonial Offices.—Mr. Dudley Fortescue, on Friday, asked the First Commissioner of Works whether, as at this advanced season there was no indication of any works in progress, it was intended not to proceed during the present year with the erection of the new Home and Colonial Offices.—Mr. Horsman also put a question as to the removal of the buildings in King-street.—Mr. Ayrton replied that the building of the new Home and Colonial Office would be proceeded with as soon as the Government had given the requisite sanction for that purpose. The plans and estimates for the buildings were under the consideration of the Government, and he expected their decision in a few days. With regard to the property lying between these proposed buildings and Parliament-street, he might say that the purchases had not yet been completed, and several houses were specially occupied for short terms. There was no intention to pull down these buildings until the new buildings were in such a state as to render it necessary. These buildings were not purchased to improve Parliament-street, because improvements of that kind must be carried out by means of the local funds.

Thames Sewage.—Mr, James Howard asked the First Commissioner of Works on Monday whether the effect of the Thames Navigation Bill, as amended, would not be to throw upon the same body of ratepayers who already bear the expense of pumping the sewage of London into the Thames, the further expense of dredging it out. And whether he would state the reasons, if any, why he did not call upon the Metropolitan Board of Works to enforce the carrying out of the contract made between the said board and the Metropolis Sewage and Essex Reclamation Company for the diversion from the Thames of the sewage of the northern area of the metropolis, which contract was confirmed by the Act 28 Vic., c. 121, intituled "The Metropolis Sewage and Essex Reclamation Act, 1865."—Mr. Ayrton said that should the deposit of the sewage obstruct the navigation it would be removed at the expense of the ratepayers. With respect to the Essex Reclamation Company, it had not been a financial success, but Parliament would take care that the company should bear its own losses and not throw them on the ratepayers.

ASSISTANT SURVEYOR OF WORKS.—Mr. B. Hope asked whether it was true that it was in contemplation to create a new office of assistant surveyor of works, and whether Mr. Ayrton had any objection to lay before the house the conditions of appointment and the qualifications required for the office; and, in particular, whether he would state if the new assistant surveyor would be required "to design and superintend the erection of new buildings," and "should also be capable of making technical reports properly composed and spelt."—Mr. Ayrton replied in the affirmative, and that the applicants would be all examined by the Civil Service Commissioners.

THAMES EMBANKMENT.—Mr. B. Hope asked the First Lord of the Treasury what steps her Majesty's Government were taking to erect the new Natural History Museum on the Thames Embankment, as unanimously recommended by a select committee of last session, on the suggestion of Mr. Layard, then First Commissioner of Works, and with the approbation of the heads of the Natural History Department of the British Museum.—The Chancellor of the Exchequer said the report could not be carried out without taking back from the tenants of the Crown the ground secured to them by the Embankment Act, and the Treasury was not prepared to recommend its purchase.

NEW REFRESHMENT-ROOMS.—Mr. Bentinck asked the First Commissioner of Works whether he intended to propose a vote during the present session for providing new refreshment-rooms for the members of that house; whether he intended to adopt the plan which was appended to the report of the select committee of the house, dated 25th of May last, and which had been altered by Captain Galton from the plan of Mr. Barry, approved last year by the then First Commissioner of Works, and by the select committee of the House of Lords; whether he had considered the objections raised by the select committee of the House of Lords in their second report to the altered plan, and whether the altered plan had been submitted to and approved by a competent professional architect; and whether the preparation and execution of the final plan would be entrusted to Mr. Barry, or to some other competent professional architect.—Mr. Ayrton replied that the plan of the committee of last session would cost £24,000. He had, however, had a plan prepared by the officers in the department of works, which he had submitted to the select committee of this session, by which it was unanimously approved. Before they could make their report the Black Rod Committee made its report, which was now before the house, enabling them to consider how it respected the privileges of the Crown and the dignity of the House of Lords. There would be no estimate prepared until a final decision was arrived at.

◆

Building Intelligence.

◆

CHURCHES AND CHAPELS.

CONINGTON.—The parish church of Conington, Cambridgeshire, which has been closed for the past few weeks for restoration, will be re-opened on the 26th inst. The chancel has been entirely rebuilt, and the body of the church repaired and reseated, under the direction of Mr. W. M. Fawcett, of Cambridge.

DALSTON BAPTIST CHAPEL.—The ceremony of laying the memorial stone of this chapel took place on Wednesday week. The total cost of the chapel will be about £4500. The building will be erected in the Venetian style of architecture. It will be 70ft. by 40ft. There are to be vestries, school-rooms, and every convenience.

ELY CATHEDRAL.—The restorations which were commenced a short time since in the south transept of Ely Cathedral are now in progress, and are proceeding in a very satisfactory manner. The grand old western tower is being strengthened by the introduction of a large number of wrought-iron ties, the weight of which may be estimated at 40 tons. This work is to be done in a similar manner to that at Salisbury Cathedral a few years ago, under the immediate direction of Mr. G. G. Scott, and carried out by Mr. James, of London, and Messrs. Freeman, of Ely. The nave floor has just been completed, at a cost of about £3000, and adds materially to the beauty of the building. Three more of the vacant canopies under the lantern have been filled with carved figures in stone, presented by the Bishop of Carlisle. Three more stained windows have been placed in the north and south sides of the choir. It is stated that during the last quarter of a century £40,000 has been expended upon this noble edifice.

GLOUCESTER CATHEDRAL.—Some months ago the Freemasons of Gloucestershire expressed a wish to undertake the restoration of some distinct portion of Gloucester Cathedral, and it was suggested that they should provide the new reredos, at a cost then estimated at £600. A committee was appointed by the Provincial Grand Lodge, the £600 was raised, and at a recent meeting it was ordered that a communication should be made to the Dean to the effect that "the Freemasons are prepared with the £600, the amount which they were led to believe the restoration of the reredos would cost, and are most anxious to undertake that work; but that the committee do not believe it to be possible to obtain a larger subscription." The cost of the reredos, as designed by Mr. Gilbert Scott, is expected to be about £2000.

HINTON MARTEL.—The church of S. John the Evangelist, Hinton Martel, Dorsetshire, was re-opened on Tuesday week, after restoration. The old church was entirely pulled down, but its main features are perpetuated in the new building. The external walls are of flint, with bands of local green stone. The new windows, doorways, and dressings, are of Box Ground stone. The edifice comprises nave, north aisle, chancel, and north chancel aisle, with a Norman tower at the west end. Internally the walls are lined with white bricks, relieved with bands of red brick, and the internal dressings are of Bath stone, relieved with brown and green stone. The walls are built hollow, to exclude damp. The nave is separated from its aisle by an arcade of four arches of Bath stone, moulded and springing from octagonal piers, with moulded caps and bases. The roofs are of open deal timbers, stained, and plastered between the rafters; the principals have moulded-pointed arched ribs. The roofs are covered with tiles, with ornamental ridges. The sacrarium is laid with Minton's tiles, and the carvings were executed in part by Mr. Boulton, but principally by Mr. Weaver, of Worcester. The chancel seats are of pitch pine, and the benches in the nave and aisles of deal, stained and varnished. Accommodation is provided for 253 persons. The original drawings for the restoration of the church were prepared by the late Mr. John Hicks, of Dorchester, but the work has been carried out under the superintendence of Mr. G. R. Crickmay, of Weymouth; Mr. A. H. Green, of Blandford, being the builder. The cost has been upwards of £2000.

KERSLEY.—The first steps towards the erection of the new church of S. Stephen, Kersley Moor, Farnworth, were taken last week, when the ground was marked out. The excavations for the foundation will be commenced in a few days. The site adjoins the school-room on the Manchester-road. The church will be erected from a design by Messrs. Henry and Medland Taylor, architects, Manchester; Messrs. Ellis and Hinchliffe, of Manchester, being the contractors. The style chosen is Decorated Gothic, and the church will comprise, nave, aisle, chancel, vestry, organ chamber, and a tower at the west end of the nave.

SALFORD.—A new Wesleyan chapel, situate in Regent-road, Salford, was opened on Thursday week. It has been built from a design by Mr. Webster, architect, and will seat 850 persons. The cost has been £4000.

LEITH.—The foundation-stone of a new Free Church dedicated to St. John, was laid at Leith, on Monday. The building, which is being erected according to the plans prepared by Mr. John Patterson, architect, Edinburgh, is to be of an oblong form, provided with galleries on three sides, and will be seated to accommodate 906 persons. The style of the architecture is Gothic, and the most prominent feature in the building will be a square tower, rising to the height of 150 feet to the point of terminal. Charlotte-street front is to have five windows, which will light the area of the church. Exclusive of the tower, for which there is a separate fund, the structure when finished is expected to cost over £5000.

LINCOLN.—The new church of St. Peter's-in-Eastgate, which has just been completed from designs by Mr. Blomfield, architect, of London, was consecrated on Wednesday week, by the Lord Bishop of Lincoln. The edifice contains sitting accommodation for 500 persons; it consists of a nave and north aisle, chancel, organ-chamber and vestry, with south and west porches, a waggon-head roof to the chancel, and seats of stained pine. The style is First Pointed; of a simple and massive character. The dimensions of the church are—length of nave, 8ft. 9in.; chancel, 29ft.; width, 40ft. 10in.—chancel, 22ft.; height from the floor to wallplate, 22 ft.; to ridge of roof, 42ft. The church is built of Lincoln stone, rock-faced, with dressings of Bath stone; the interior walls are plastered with Bath stone quoins and dressings. A hot water apparatus in a chamber beneath the vestry supplies warmth. The reredos is a beautiful work of mosaic decoration, representing the emblems of the four Evangelists, with those of S. Peter and S. Margaret, the patron Saints of the church, a beautiful cross in the centre, and over it the inscription "Holy! Holy! Holy! Lord God Almighty." The contract for the building, exclusive of the reredos and east window, which are private gifts is within the architect's estimate of £2500.

WHITTLESEY.—The fine old church of S. Andrew, Whittlesey, Isle of Ely, is about to be restored. The committee for the restoration have appointed Mr. R. R. Rowe, of Cambridge, to be their architect, and that gentleman is now preparing the plans and specifications necessary in the application to the Bishop's Court for a faculty.

BUILDINGS.

BAKEWELL.—The foundation stone of the new vicarage at Bakewell was laid on Saturday afternoon last. The style is Gothic, with limestone facings and Stanton gritstone dressings, and the interior fittings will be of pitch pine. Mr. A. Waterhouse, of London and Manchester, is the architect, Mr. J. Dickson, is the clerk of works, and Messrs. Thomas Clay and Son, of Manchester, are the contractors. The entire cost of the new vicarage, adjacent buildings, &c., will be upwards of £6000.

MERTON, SURREY.—On Monday last, the foundation stone of the new National Schools at Merton was laid by the Lord Bishop of Winchester. The New Schools are the gift of the late Mr. Richard Thornton, of Cannon-hill, Merton, who bequeathed £10,000 for that purpose; they are intended to take the place of the present schools, which have become totally inadequate to meet the requirements of the parish. The plan comprises boys', girls', and infants' schoolrooms, with classrooms attached to each, and also residences for a master and two mistresses. The works are being carried out by Messrs. E. B. Gammon and Sons, of Lambeth, côntractors, under the superintendence of Messrs. Aldridge and Willis, architects, of 6, John-street, Bedford-row, whose designs were selected in a limited competition, the amount of the contract, exclusive of fittings, being £2550.

NEWCASTLE-ON-TYNE.—The foundation stone of new schools in connection with Bath-lane Church was laid on Thursday week by Lord Amberley. The buildings will be entirely of stone, and in the Gothic style. The principal elevation, facing Locke-street, will present a large centre block, flanked by gables at the east and west ends. The building will be lighted by large three-light windows in the centre block, and by four-light windows in the end gables. Admission will be gained through a porch at the north-west angle, and by two side doors situate at the east end. The centre block will be surmounted by a bell turret. The school room, which internally measures 85ft. by 55ft., will be divided into centre and side aisles by cast iron columns, used as supports for the roofs, the roof over the aisles being open, and that over the nave waggon-headed in form. The height from floor to ceiling will be about 30ft. Suitable class rooms will be provided, as well as a china closet, a tea boiler room, lavatories, water closets, and other conveniences. The building will be warmed by hot water from the heating apparatus in connection with the church. The cost of the schools will be about £2000, and they will be erected from the designs and under the superintendence of the architect, Mr. T. Oliver, of Newcastle-on-Tyne, who was also the architect of the church.

PLYMOUTH.—The Town Council of Plymouth have decided to expend £35,000 on the erection of assize courts and other public buildings. Twelve firms, from Bath, Salisbury, Exeter, Plymouth, Tavistock, and Saltash, tendered, the difference between the highest and lowest being £2900. The tender of Messrs. Call and Pethick, of Plymouth, was accepted.

Rotherham.—At the annual meeting of the constituents of the Rotherham Independent College, last week, it was stated in the committee's report that a site for the proposed new college had been purchased, at a cost of £3200. Plans of the building it is proposed to erect have been prepared by Messrs. Habershon and Pite, of London, the estimated cost being about £22,000.

The Surrey Sessions House, Newington.—There is a fair prospect of great improvements being carried out at the Surrey Sessions House, Newington-causeway, which has long been found inconvenient and inadequate to the necessities of the county business. At a meeting of the Surrey magistrates at Guildford, last week, the committee upon the improvement of the Sessions House reported that the County Surveyor (Mr. C. H. Howell) had prepared detailed plans, elevations, and sections, which seemed to the committee to meet all the requirements of the county business, but the surveyor had been unable, for want of time, to obtain tenders for carrying out the same. The surveyor's report estimated the cost of carrying out the necessary alterations and additions at £13,000, not including heating and ventilating the courts, architect's commission, or salary of the clerk of works. He had ascertained that the cost of heating and ventilating the courts in the same way as at the Manchester and Durham courts would be £1000. Pending the attainment of the necessary powers from Parliament to carry out the work, the committee, while fully approving of the plans of the surveyor, suggested that no tenders should be obtained at present, and recommended that the committee should be continued from session to session in order to bring the matter under the consideration of the court when the result of the application to Parliament shall be known. The report was adopted by 15 to 6.

◆

TO CORRESPONDENTS.

We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

◆

Received.—D. J. and J. N.—T. B.—A. S. & Co.—C. B. A.—C. C. & Co.—E. N.—W. J. T.—T. C.—O. Bros.—J. F. & Co.—J. M.—G. F.—F. H. C.—R. W.—A. R. & Co.—R. G.—W. L.—D. S.—E. F. G. P.—B. & Son.—M. Bros.—J. H.—J. H.—W. B. N.—J. H.—J. N.

Too Late.—R. H. Burden.—Samuel Trickett.—B. Ponton.

J. Jerman.—With sketch of tomb of Thomas Andrew, Exeter.

◆

Correspondence.

BATH STONE AS A BUILDING MATERIAL.

(To the Editor of The Building News.)

Sir,—In publishing a full report of Mr. Parslow's hints on specifications in last Friday's Building News, you have done good service to all interested in the building trade if Mr. Parslow treats each department of this subject with equal ability to that evinced in his pertinent remarks on Bath stone.

Most readily do we join with him in asserting that the cause of failure of the "Bath stone in Liverpool (and elsewhere) exists mainly in applying to the wrong quarries for stone for outside purposes," and that "selection" and "laying Bath stone on its proper bed has a great deal to do with its lasting well."

Bath stone is so cheap in its first cost, so easily worked, and so effective in its general appearance, that great as is its present consumption, it ought to be more extensively used than it is. The only objection urged by its opponents against its more general adoption is that it here and there fails to withstand atmospheric influences. After many years of experience, we can briefly point out how a recurrence of these few cases of failure may be avoided :—

Firstly.—For situations exposed to the weather, employ only Combe Down, from the Lodge Stile Quarries, or Box Ground stone. The former, being free from the yellow lists occasionally found in Box Ground, is superior as a weather stone.

Secondly.—As the nature of each stone varies in different localities, purchase at those quarries whose stone has been proved durable, and whose proprietors have a direct interest in the permanent success of Bath stone.

Thirdly.—Lay the stone on its natural bed.

Fourthly.—By means of a competent clerk of works ensure the employment of good stone and the carrying out of the preceding requisition ; for it is a fact that all sorts of rubbish are occasionally used under the name of Bath stone. A few months since a gentleman sent us a piece of *sandstone* taken from a building for which Bath (which is a *carbonate of lime*) had been specified. The building was decaying away ; and Bath stone, in consequence, was suffering in public estimation.

Relative to Farleigh Down, we cannot agree with Mr. Parslow that it "has no advantage to offer to Liverpool architects," for wherever it is used it gives universal satisfaction, and is most extensively employed for exterior and interior work ; its warm tinge of colour is more agreeable to the eye than the cold white of Corsham Down, and it works with greater freedom. With this exception of colour we entirely concur in Mr. Parslow's opinion of Corsham Down.

Our apology for so far occupying your valuable space is our anxiety that Bath stone may be so treated that it shall not only be considered a *cheap* and *handsome* but also a *durable* stone.

Your insertion of the above in your next issue, as a supplement to Mr. Parslow's remarks, will greatly oblige.—We are, Sir, &c.,

Stone Brothers.

Bath Stone Office, Bath, July 6, 1870.

"TENDERING WITH A VENGEANCE (!)"

Sir,—Such is justly your exclamation in publishing the tenders for the restorations of S. Sidwell's Church, Exeter, in last week's number, of which contemplated improvements my description appeared in your issue of June 17th.

(Highest)—Easton	£1740 (!)
(Lowest)—Hunt	980 (!)

Permit me to call your attention and that of your numerous readers, by way of contrast, to the list of estimates for the erection of the new Guildhall, Plymouth.

(Highest)—Hunt and Seacombe, Exeter	£57,506
(Lowest)—Trevena, Plymouth	28,989

Thus, in a week, we find the same man offering in one place to do work for half the price of the highest tender, and £414 less than the next to lowest, in a small job ; and the next day being *double* that of the lowest and £12,606 in excess of the next to highest !

Is it not such blundering ignoramuses that bring the morality of the building trade into discredit and bad repute, totally disgusting honest and respectable contractors, such as are those worked for by your Exeter correspondent,

J. V.

INDUCEMENTS FOR COMPETITION.

Sir,—Behold a *morceau* of the 19th century, circulated by certain Solons of the thriving and good old town of Nottingham! The italicising is not an interpolation, but is in the original.

"Sir.—It is proposed to build a New Wesleyan Chapel, with School-room underneath, at the top of York-street, in this town. The entire cost is not to exceed £3500 (the site excepted); this sum must include boundary walls, heating with Haydn's apparatus, if not too expensive, all inside fittings, together with architect's fees, *in short, everything, and there must be no extras.*

"The building to accommodate about 800 adults, including 100 free sittings. The exterior to be Gothic, *without spire, liberally treated.*

"A large room will be required at the rear of the chapel, on the same level, to hold at least 100, and a minister's vestry attached. Three other class rooms will be required.

"The interior to have no pillars, except for gallery supports. The pews to be of pitch pine, stained; the rostrum, or semi-rostrum, placed low, with communion in front to command the gallery and area with ease. The roof and the whole arrangement must *be carefully adapted for hearing.*

"The Committee are desirous to confine the erection of this Chapel to one of the architects of Nottingham; a few names have been selected, and if you will furnish an elevation and ground plan, on condition that, if approved, your services will be accepted as architect, the Committee will feel obliged. Please note that no compensation is offered.

"Plans, &c., must be forwarded to the Rev. J. Mason, 58, Mansfield-road, Nottingham, on or before Monday, July 25, 1870.

"On behalf of the Committee, we remain, yours &c.

"J. Mason, Ministerial Secretary,
"J. Howitt,
"Jas. Robinson, } Lay Secretaries.

"N.B.—In furnishing your estimate of cost, please state difference between Bulwell stone and brick.

"Clumber-street, Nottingham, June 29, 1870."

Truly the document has vigour if it lacks perspicuity. Upon the money part our friends are very strong. "The entire cost, including architect's fees, is not to exceed £3500," and, furthermore, must include "*in short, everything,*" and beyond this, "*there must be no extras*"! Safe people these committee men! But how about "Haydn's" (*sic*) apparatus" (Possibly he of Cromer-street is intended, and not the man of the "box of whistles;" the former will feel flattered, however.) We think the apparatus *will* be "too expensive" with the "school-room underneath." The question has evidently been a botherer for our "committee," and so is bequeathed to the "selected few." Our Wesleyan friends have, in their time, done good service to humanity, but they have not hitherto been exactly in the van in "Gothic"; we hail, therefore, with unmingled gratification, the advent of the "Gothic exterior *without spire, liberally treated.*" Now for the olive wreath, ye "selected" sons of high art! De Wykeham to the rescue! For oh! when you leave the "exterior" and get to the interior, "what a falling off is there!" a mist of "pews," "a rostrum or semi-rostrum," and "a communion (whatever that may be) to command the gallery!" (Shade of Murray!) Well, this bit is a *leetle* obscure, or, "in short," as the committee would put it, a puzzler. Well, never mind, for as Lord Dundreary says, "puthles are made, you know, on purpoth." Cheer up, for inside no "Gothic liberally treated" haunts your bewildered brains. What shall the inside be, then? Echo answers—"What?" Mr. Chunder Sen, would probably suggest Græco-Indian, with Chinese feeling, for is it not chronicled, the greatness of Confucius as a master-mason? But steady, gentlemen, the whole arrangement "*must be carefully adapted* for hearing," not a bad idea either—and another strikes us; we adventure it—also, let "the whole arrangement be carefully adapted for"—worship.

Do our eyes deceive us? "Please note that no compensation is offered!" This is too "dree" to be true, because we have a lively recollection of a ten-pounder being given, or at least offered, for a £1500 design, and if a more subdued, yet still a grateful reminiscence, of the offer of a £5 "prize" in another case. But come, come, "no compensation"! We like a *little* humour, but, "honour bright," this is stretching a joke too far; we shan't let you off without "a leg of mutton and trimmings," and liquor round.

"Plans, &c." in three weeks. Oh, they'll do double that "like winking," all of them; they've nothing to do in Nottingham, but to offer "services that, if approved, will be accepted." All right Messieurs le Comité.

"N.B."—What, isn't the the female mind at rest? What next? "difference in cost"—our "estimate"—estimates made for us—"not to exceed £3500" must include in short everything," and in addition, "no extras." Ha! ha! "difference?" Good—two and two won't make five, "no way you can fix it." Sanhedrim of Clumber-street, Nottingham, fare ye well; may your shadow never grow less!—I am yours, &c.

Leonardo De Pasquinadez.

THE ARCHITECTURAL EXHIBITION.

Sir,—I have read the criticism which appeared in your last week's number on the Architectural Exhibition, and noticed the remarks of your critic on the cartoon which you honoured by a place in your journal some weeks ago. As your critic has discovered a comic element in my drawing, he must not be surprised to learn that his own critique reaches in some points the undesirable, although proverbial, "step from the sublime." I fear that in the agony of his endeavour to say something new and clever, he has managed to stumble over the boundary of truth, and indulged in—well, call it—exaggeration. Or, if we give him credit for entire truthfulness, I must say that, judging from the abnormal wildness of his statements, and knowing that the maudlin drunkenness which he imputes to the heroes does not exist in the cartoon, I can only imagine that he unwittingly caught the reflection of his own face in the glass which covers the picture—and described accordingly.

The blue leggings (which I suppose offended your critic from their not being of the complementary colour to the verdant tinting of his own eyes) were rather fashionable in the 12th century, if we may credit the manuscripts of the period.

His remarks about the drawings of Mr. Owen Jones are chiefly noticeable from the lugubrious way in which he forms himself and his co-believers into a peculiar people, distinct from "the world," and also for the charming liberality of sentiment which sees in Mr. Owen Jones's drawings only "costliness without art," a belief which bears a strong resemblance to that of the Ranter, who could see no religion in any creed in the world save his own.

In one of the drawings favourably noticed by your critic, and attributed to me, I do not recognise in his description any features of my own work, and fancy there must have been some mistake in the numbering; but as I have not been able to visit the exhibition to see whether or not this was actually the case, I can only meantime disclaim any desire to appropriate commendation due to somebody else.—I am, Sir, yours, &c.

J. M. S.

Sir,—A mistake has been made in the numbering of the frames at the Architectural Exhibition, owing to which a subject exhibited by us has been attributed, in your concluding critique, to Mr. Moyr Smith. The frame alluded to is numbered 147; it should have been 146, which you will find, on reference to the catalogue, to be a design for a glass blind (executed in brown outline, on Powell's yellow glass, in lead work), by your obedient servants,

Goodman and Vinall.

24, King William-street, Strand, July 4, 1870.

Sir,—In the critique in your last issue upon "144, Art Tiles, and 145, sketches for glass under the name of G. E. Cook," it is added that the names of the artists should be given, so that full credit may be apportioned to whomsoever the various portions of the work may be due. I am therefore desirous of informing you that with the exception of one by Mr. Lonsdale, the tile cartoons were by Mr. Holiday; that they were carried out by myself, and that the cartoonist's name appears in the corner of each tile. I beg also to add that the designs and sketches for glass, No. 145, were by, Sir, your obedient servant,

G. E. Cook.

8, George-street, Hanover-square, July 4, 1870.

ARCHITECTS' CHARGES.

Sir,—My attention was drawn to the question asked in "Intercommunication," as to the practice some architects have of charging the contractor 2½ per cent. I thought of answering it by saying, that, unfortunately, some reputed respectable architects were in the habit of so doing, to the shame of the profession, but I feared that such an admission would not be inserted. Your leader of June 24, however, admits the fact, along with others—all true and all disgraceful, to those engaged in building operations; at the same time, you have a needed word of rebuke to the "hard bargainers" who manufacture rogues by their legal injustice. But there is one sentence to which I must object, and which calls for an explanation; it is this, "We would advise gentlemen who build to employ a *first-class* architect—an honest one at all events." Now what is a *first-class* architect? Most readers will understand by the term, as I do myself, a man who occupies a high, or at least a very respectable position as an architect. Such a man may often be as honest as his poorer companions, and may have gained his position by dint of ability, but does it not often happen that "first-class architects" have become so by pursuing the underhand courses you condemn, thus enriching themselves unjustly, while they have liberally expended much of these illegal gains, in bribing those who, as they believe, can procure them a "large job." Dishonesty does not always, nor indeed often, find its punishment in poverty; but there are other modes of retribution, even in this world. It is not every "first-class" architect who is even clever; we all know, that if a noodle finds work, he can employ a clever man to do it. I would therefore put in a plea for the occasional employment of the poor but honest members of the profession, the men who are poor because they scorn to adopt the usual modes of getting rich. There are many of them in all professions, but the rich public pass them by because they cannot spend as they spend, and the poorer public like the sound of a big name—I am, Sir, yours &c.,

F. S. A.

A SUGGESTION.

Sir,—Twice a day I ride past the "Hall of Science," &c., in the Kensington-road, and the gorgeous "memorial" opposite, and I am much edified by the intelligent criticisms passed upon each by my fellow-riders, the public. The idea most frequently suggested by the "Hall" is that of a monster twelfth cake, and the "memorial" is as constantly likened to the conventional "ornament" thereof. The critics proper are agreed that the structures in question are unhappy in their present relations; listen, then, to a plain remedy. Place the "memorial" on the "hall;" the former would occupy an improved site, and the latter would receive its appropriate *finish.*—I remain, Sir, yours, &c.

Y. De Wake.

MR. BAZALGETTE AND HIS SON.

Sir,—I see from the last report of the Metropolitan Board of Works, that Mr. Bazalgette the Engineer, shows that Mr. Levick, the district clerk of works, is in want of assistance; Mr. Levick has now two assistants. Mr. Bazalgette concludes his report (see page 666) with these words, "and I recommend that Mr. Edward Bazalgette [his son] be appointed as such third assistant."

A. Z.

Intercommunication.

QUESTIONS.

[1890.]—BEAMS, COLUMNS, GIRDERS.—Would some of your kind readers recommend me a small work—not too profound—for calculating the sizes of the above, and treating of the matter generally?—Young Architect.

[1891.]—DIMENSION BOOK.—I believe there is published a dimension book, or a book showing the contents of different size blocks of stone, &c. Can any of your readers inform me where I can get it, and about the price?—Randell Clifford.

[1892.]—BEST PERMANENT WASH ON OUTSIDE STUCCO.—Will any of your readers be kind enough to give a statement of the ingredients and quantities, which will answer for the above purpose; tried experiments, which have satissactorily answered?—J. P.

[1893.]—ARCHITECTS IN AMERICA.—Can any of your correspondents inform me if there is an opening for architects assistants and draughtsmen in America, and if so, in what part, and in what manner may such employment be heard of? Any information will oblige.—One Too Many Here.

[1894.]—LEAD ROOFING.—The rain appears to dissolve the lead on the ridgings of my house, causing whitish streaks to run irregularly over the slates. The slates are exposed to view, and look very ugly in the dry weather. Can any one suggest a remedy?—L. R.

REPLY.

[1885.]—BALL-ROOM.—The space to allow for each person should not be less than 16 feet superficial.—W. R. A., Uckfield.

STAINED GLASS.

Cork.—There is at present on view at the Edinburgh and Leith Stained Glass Works, Leith, a series of windows, just executed by Mr. Barnett for the church of St. Peter and St. Paul, Cork. The windows are four in number, each consisting of two lights, with tracery above, and, with a fifth window which has already been placed, will complete the apsidal chancel for which they are intended. Each light is designed in five stages. In the lowest is a panel containing the figure of an angel displaying a scroll; next comes the full length figure of a saint; then another panel, with an angel, over that a second full-length figure, and finally a third angel, occupying a panel in the cusp-headed top. The groundwork throughout is ruby glass, variegated with conventional foliage, the latter being supported from stalks which run up the sides of the lights, and, with their twisting and interlacing, define the various stages and panels.

Mark (Somersetshire).—In a sermon preached in the parish church of Mark on Sunday week, on the death of Mr. George Webber, deceased was spoken of by the preacher as "one who of late years had been occupied in an artistic work in this church which is likely to produce some effect on the prevalent and perhaps on our national taste." "The time may not be far off," said the preacher, "when the popular and general taste will become more formed, more correct, because more according to nature, and therefore more artistic; and our children may live to see the chromatic windows in this church studied as faithful revivals of the works of mediæval, or rather of protoæval art. The time may come when Biblical chromatics will be more heeded, and the ancient language of colours (coeval with creation, and still existing in the sun-rising East) read with understanding and spoken with fluency."

STATUES, MEMORIALS, &c.

The Albert Memorial, Hyde-park.—The model of the colossal statue of the Prince Consort, intended for the memorial in Hyde-park, is (says the *Morning Post*) about to be placed in position, and, if found satisfactory, will be reproduced in bronze and gilded. Mr. Foley, R.A., is the artist to whom this work has been entrusted, and her Majesty has expeessed her approbation of it, and her desire that it should be completed as soon as possible,

Smollett Testimonial Fountain.—Recently the foundation stone of a testimonial fountain at present in course of erection in the village of Alexandria, Vale of Leven, N.B., in honour of Mr. Alexander Smollett of Bonhill, was laid with Masonic honours. The plans sent in by Messrs. Adamson and M'Leod, Glasgow, were unanimously adopted by the Building Committee. The execution of the work was contracted for by Mr. W. Barlas, a local builder. The fountain is designed in the French-Gothic style of architecture, and is to be built with freestone from Bannockburn quarries, with shafts of red and grey granite. The cost is £500.

WATER SUPPLY AND SANITARY MATTERS.

The Thames and the Sewage.—The Commons Select Committee, to whom the Thames Navigation Bill was referred, have made the following general report to the House:—"The Committee having had before them an Act passed in 1855, "An Act for the better local management of the Metropolis, in which the Metropolitan Board of Works is directed to make such sewers and works as they may think necessary for preventing all or any of the sewage within the metropolis from flowing or passing into the river Thames in or near the metropolis;" and the Act passed in 1858 to amend the same; also an Act passed in 1865, 'For reclaiming from the sea certain lands on and near the eastern and south-eastern coast of Essex, &c., and for utilising the sewage of North London, &c., specially report that it appears, on the evidence of Sir John Thwaites and otherwise, that the Metropolitan Board have repeatedly had under consideration the best means of utilising the sewage of the metropolis, but that nothing effectual has yet been done, and the sewage still flows into the river Thames. The committee recommend that immediate attention should be given to the subject, in order that the sewage of the metropolis should be utilised as far as practicable; and, in the meantime, until this can be accomplished, the committee have deemed it expedient to approve the Bill which they have reported to the house for preventing any obstruction to the navigation of the river from the flow of sewage from the metropolitan outfalls.

Bridport Water Supply.—The prospectus has been issued of the Bridport Water Company, with a proposed capital of £12,000, £9000 in shares of £5 each, and £3000 in debentures. The engineers are Mr. J. H. Toline, C.E., of 1, Victoria-street, Westminster, and Mr. A. S. Hamand, of New-street, Birmingham. The source from which it is proposed to bring the water, is Litton Cheney, "where there is a quantity constantly running five times greater than Bridport, with its present population, could use, assuming an average consumption of thirty gallons per head per day." By an outlay of £9,500, it is stated that 250,000 gallons of water per diem are obtainable. The town council has, we see, intimated its intention of supporting the company, and very wisely so too, for an efficient water supply will go far to remove the unenviable notoriety which Bridport has for some time suffered under, of being extremely deficient of good sanitary arrangements'

Camborne.—The new reservoir for the Camborne Water Works, is being pushed on with all possible speed. Mr. West, of St. Blazey, is the contractor.

The Sanitary Condition of Wigan.—At a special meeting of the Wigan Public Health Committee recently, a letter was read from the medical department of the Privy Council, in which a very severe censure was conveyed with regard to the manner in which the sanitary regulations of the town are conducted. The letter went on to recommend that in future there should be a regular and frequently recurring inspection of the houses and domestic offices throughout the town, efficient and peremptory action against every nuisance that is discovered, the proper removal of excrementitious matter, and the appointment of a medical officer. After some discussion, the Board resolved to appoint a medical officer at a salary of £50 per annum.

The Sewage of Reading.—The town of Reading is at present applying to Parliament for powers to purchase land on which to distribute its sewage. The Bill has already passed the House of Commons, and is now before a committee of the House of Lords. An amusing incident occurred before the Committee last week, as one witness (Mr. W. Hope, of Barking), produced a number of specimens of field crops and fruits grown by sewage, being some of a total catalogue of 38 to which he alluded, and he apologised for introducing them into the Committee room, on the ground that Dr. Letheby had stated in evidence that, as a fact, nothing could be grown by sewage but Italian rye grass.

Water and Sewage Irrigation.—Mr. J. J. Mechi, of Tiptree Hall, writing on the subject of water and sewage irrigation, says he is glad to see that towns and cities are obtaining Acts of Parliament giving them powers to take land for such purposes. He reminds them that an essential element of success is the proper underdrainage of such soils as are not naturally filtrative. So far as the practical part goes there is really no difficulty, for steam power has made tha operation easy and cheap.

Bolton.—On Friday last the corporation of Bolton received from the Home Secretary the provisional order empowering them to acquire land for sewage outfall works at Bolton and other improvements, and a copy of it will be immediately served by the Town Clerk upon the respective owners.

LAND AND BUILDING SOCIETIES.

Haslingden Benefit Building Society.—This society has issued its second annual balance sheet. The number of shares purchased this and last year, amount in value to £2190. The society pays no dividend, but lends the money to members for their mutual benefit. It now numbers nearly 100 members, and the profits amount to 7½ per cent., whilst the working expenses of two years amount only to £34.

The Conservative Land Society.—The report of the executive committee, presented to the members at the 71st quarterly meeting on Tuesday, states that the receipts for the Midsummer quarter were £36,093 14s. 3d., and the grand totals to the same period £1,546,666 8s. 2d. The £50 shares issued for the quarter were 618, making the total number of shares issued to Midsummer, 1870, 34,278—a subscribed capital of £1,718,900—the withdrawals amounting to £389,029 1s. 7d. The reserved fund amounted to £10,500, exclusive of office premises, furniture account, &c. The report added that the society's members had invested largely in the shares of the United Land Company (Limited), estates purchased by which supplied the society with a large building advance business. As an illustration of the habits of saving by the members, the report referred to the reinvestment of their interest warrants, the amounts of which were added to their shares. The report was approved, and the usual vote of thanks passed to the board.

LEGAL.

An Architect's Action.—Court of Exchequer, Guildhall, July 6.—Before the Lord Chief Baron and a Special Jury.—Ebdy v. McGowan.—This was an action by Mr. T. C. Ebdy, architect, of Durham, against the Rev. E. McGowan, a clergyman residing near that City, to recover certain professional charges amounting to £241, relative to churches and a parsonage built, or proposed to be built for the defendant. The defendant had paid £25 on account, lodged the sum of £100 in court, and disputed his liability for the rest of the claim. Mr. Digby Seymour, Q.C., and Mr. Bruce appeared for the plaintiff; Mr. Aspinall, Q.C., and another gentleman whose name we did not hear, for the defendant. Mr. Seymour stated the case for the plaintiff, which was as follows:—His client had been instructed by the defendant to prepare designs, specifications, and obtain tenders for a church to cost about £2000, and had done so. However, when the tenders came in, the defendant, in accordance with the wish of the bishop, had determined on building two smaller churches instead, and of course this first church was abandoned. For this service he charged 3 per cent., being as per the scale of charges of the Institute of Architects, and this formed the first item of this bill. Plaintiff then prepared designs for a second church which had been built at a cost of £900, and for this he charged the usual commission of 5 per cent. He also prepared designs for two other churches not yet built for which, however, acting in a liberal spirit, he made no charge. The rest of the account, as regards the churches, was made up of travelling and other incidental expenses, such as stationery, postage, and advertising, which are always chargeable in addition to the commission. He also at the request of the defendant prepared designs and got tenders for a parsonage to cost about £2000, for which the defendant hoped to obtain a grant from the Ecclesiastical Commissioners, and the drawings and specification were sent to and duly approved by them with that view. In order to getting tenders for this, it was necessary to employ a surveyor of which the defendant was duly apprised. When the tenders for this came in, the defendant however refused to allow the plaintiff to proceed with the work, alleging certain neglect on the part of the plaintiff with respect to the church, and demanded the drawings and plaintiff's account. The plaintiff sent in his account accordingly, charging 3 per cent. and expenses, as before, also the surveyor's fees, but declined to surrender the drawings, as being contrary to the usage of the profession. The defendant then refused to pay his account, disputing the correctness of his charges relating to the churches, and denying his liability as to the parsonage altogether. He also refused a reference offered by the plaintiff, and had a copy of the account printed for circulation among the clergy of the diocese, evidently with a view to injure the plaintiff's reputation amongst them. Mr. T. C. Ebdy the plaintff, was examined at length by Mr. Bruce and cross examinedby Mr. Aspinall, and gave evidence in detail to the above effect. The first church had been designed so as to admit of partial execution, omitting the north aisle for the present, but the drawings, specifications, and tenders were got for the whole. After the advertisement for tenders was issued, the defendant wrote to countermand them. The defendant had written also telling him he would not be responsible for the parsonage, but the Commissioners should pay for it. This was however after the drawings were prepared. He (the plaintiff) had no correspondence whatever with the Commissioners, nor any claim whatever on them. The expenses he charged had all actually been incurred, and vouchers could be given. Mr. W. Fogerty, architect, was examined by Mr. Bruce as to the usage of the profession. The ordinary charge is 5 per cent. for the full service besides travelling and other incidental expenses such as stationery, postage, and advertising. Should the work be abandoned before tenders are received, the charge is 2½ per cent. if tenders are received, 3 per cent. The surveyor is usually paid by the builder who gets the work, but if the work be abandoned he is paid directly by the employer. In all cases the drawings remain the property of the architect. Cross-examined by Mr. Aspinall: In case of abandoned work the client had no right to the plans; they would be no use to him. In case of a client dismissing an architect in order to employ some other, unless it was done by consent, considered the plans should not be given up either. It was most unusual and irregular for a client to dismiss an architect until his whole work was done. The general rule was that the drawings are kept by the architect. Mr. J. P. Seddon, Hon. Secretary of the Institute of British Architects, examined by Mr. Bruce, gave similar evidence to that of the last witness. Would consider it most unjust for an architect to have to give up his plans to be carried out by some one else, possibly to the injury of his reputation. The usage of the profession is fully set forth by the published scale of the Institute. Mr. Aspinall stated the defendant's case: As to the first church, his client never wanted a north aisle to it at all, and before the tenders came in had countermanded them. He therefore should not be charged commission on the north aisle, nor for getting tenders, as by the printed rule the tenders should have been procured in order to entitle the architect to the half per cent. for them. The item for the second church, which had been built at a cost of £900, his client did not dispute; it was all that had been built from all the plans for which this enormous sum of £241 was charged. The travelling expenses, and advertising, stationery, &c., were excessive. It was absurd to charge such for a journey of 8 miles. As regards the patronage, his client, however, had distincly advised the plaintiff that he should look to the Commissioners, and not to the defendant, for payment, as he (the defendant) is only a tenant for life, and might soon have to remove to another parish. His offer to pay was on condition that the plans be given up to him, which the plaintiff would not do; and in fact the plaintiff coolly expected to be paid without giving anything in return. The Chief Baron: This seems to be entering on the question so recently agitated between the public and the architect of the Houses of Parliament. Mr. Aspinall: Not exactly, my lord; for there the work was finished, and the plans done with; but here the work was not even begun, and my client could do nothing without the plans. Mr. Bruce: It is really the same question, my lord; for if the client is not entitled to the plans when he pays 5 per cent., how can he expect them when he pays only 2½ or 3? The Chief Baron: I shall not enter on that question here, but give the defendant leave, in case of a verdict against him on this item, to move to have the verdict reduced or a nonsuit entered, as the case may be, should he be able to show cause before the full court. Mr. Aspinwall went on to complain that the case had been brought up to London, instead of being tried at the Durham assizes. Mr. Bruce said that his client had in vain offered to refer the case, but as the defendant would have it tried by a jury, it became necessary to bring it to London, in order to be able to get proper professional evidence. The Chief Baron said that had he known the nature of the case sooner, he would have ordered it to be referred. As it had gone so far now before the jury, it must be tried out. The Rev. E. McGowan was examined in support of the case stated by his counsel. Had never authorised the north aisle to the first church. Had distinctly told the plaintiff he was to be paid by the Ecclesiastical Commissioners for the patronage. Was told the surveyor would be paid by the builder. On cross-examination, admitted that in a long correspondence he had with the Commissioners, they had declined to deal directly with the architect, or to make any grant on account of his fees until the work was in progress. Had declined to proceed with the parsonage because the cost slightly exceeded the proposed grant, and also because he was dissatisfied with Mr. Ebdy. Had the plaintiff's bill printed for circulation among the clergy of the diocese. Mr. Sydney Smirke, R.A., architect, examined: It was the usual custom for the architect to retain the drawings, but in case of work being abandoned, thought the client had a right to them; also, if another architect were employed to superintend, as for works at a distance, as in the colonies, &c., thought the drawings should be given up also. The Chief Baron: Never mind about works in the colonies; tell us what is the custom in a case of this kind. Mr. Smirke: I think they ought to be given up, and in my own practice have done so. He never charged for stationery. Cross-examined: I know the rules, &c., of the Institute. I seldom attend their meetings. I have never subscribed any resolution to the contrary effect of the evidence given. Mr. Aspinwall addressed the jury for the defendant. It was clear his client had never authorised the north aisle, nor getting tenders for the first church. He was in no way responsible for the parsonage plans, which were to be paid for by the Commissioners. Mr. Bruce replied for the plaintiff. He was sure the jury would be indignant at the defence set up as regards the parsonage, as it was clear, from the correspondence between the defendant and the Commissioners, that he knew the latter would not be liable. The rest of the claim had been fully proved. The Chief Baron then charged the jury. As to the first item, he did not see what answer had been given to it. It was clear the north aisle had been shown on all the plans, and the defendant must have known of it. As to getting tenders, if they thought these had been countermanded in time, they would disallow the half per cent. for it, about £10; if not, they should allow it. He thought the travelling expenses also clearly proved. The item for postage and paper was controverted by Mr. Smirke; it was but a small item. As respects the parsonage, it was hardly to be believed Mr. Ebdy would have done all this work without knowing who was to pay him. The Commissioners could not be called on to do so, and the defendant must have known this. If the defendant had not dismissed the plaintiff, the work might have gone on, and he (the learned judge) hoped yet it would go on, as it appeared the plans had been quite satisfactory both to the defendant and the Commissioners. In the mean time they were called on to decide if the defendant were liable or not, and certainly nobody else was. The surveyor's item could hardly be questioned, as the defendant himself, by not employing a builder, had prevented those fees from being paid in the usual way. The plaintiff, by not charging for several of the plans, had shown no disposition to be grasping towards the defendant. The jury, after a brief deliberation, returned a verdict for the plaintiff for £106, being £10 less than the full amount of the claim, leave being given to the defendant by the judge to move the full court to reduce the amount, should it be of opinion, on the evidence, that plaintiff was not justified in retaining the plans of the parsonage.

Farrall v. Vincent.—An Architect's Claim.—The plaintiff in this case, which was heard at the Yeovil County Court a few days ago, was Mr. Charles Edward Farrall, late of Sherborne, architect and surveyor, and the defendant was Mr. John Vincent, an innkeeper, of Sherborne. The action was brought to recover £39 17s., being the balance of an account for plans and superintending buildings at Sherborne. The defendant pleaded that he was only indebted to the plaintiff in the sum of £11 10s., which was paid into court. The plaintiff was first requested by the defendant to prepare the plan of a cottage, for which he charged £1 1s., and subsequently did various other work for the defendant, the agreement being that he was to have 5 per cent. upon the outlay, which was to include his charge for drawings and superintendence. When he sent in his account, the plaintiff charged 2½ per cent. on the amount of the contracts, as that was the usual charge for preparing the drawings, and charged £1 per week for the time he had superintended the buildings—seven weeks. No objection was made to these charges at the time the account was sent in. The plaintiff had since done other work for the defendant, and received £30 on account. Some time after this complications arose between the parties, and the amount of the balance owing to plaintiff was disputed.—Mr. G. R. Crickmay, architect and surveyor, of Weymouth, deposed that the plaintiff's charges were perfectly fair and reasonable—in fact, they were less than the usual charges.—Mr. C. E. Benson, architect and surveyor, of Yeovil, gave evidence to the same effect, and said that the plaintiff was perfectly justified in charging for personal superintendence, as the nature of the work (an erection on old foundations) demanded his presence all day.—Mr. Thomas Farrall, architect and surveyor, of Sherborne, and brother to the plaintiff, and Mr. George Croad (the builder of the work in dispute), were also called for the plaintiff.—For the defence, Mr. Joseph K. Chant, builder and surveyor, of Yeovil, said he considered the plaintiff's charges rather high, and stated that it was an extraordinary thing for an architect to charge for time and to act as clerk of the works.—Plaintiff produced a letter in which defendant admitted several items of the disputed account, and promised payment.—His Honour allowed £5 as a sufficient sum for superintending the work, and deducted 15s. from the charges for preparing plans. Judgment for £37 2s. and costs.

Cargo of Lathwood.—In the case of Kreuger v. Blanch, the defendant, a merchant at Gloucester, gave the plaintiffs an order for "a small cargo of lathwood, of about sixty fathoms. The plaintiffs accepted this order, but not being able to obtain a suitable vessel, they forwarded eighty-three fathoms on board the Scandia to the port of Gloucester, and severed sixty fathoms from the rest of the cargo, and tendered them with a separate bill of lading to the defendant. In this action for non-acceptance of timber so tendered, it was held by the Court of Exchequer that the contract was for an entire cargo of sixty fathoms, and not for sixty fathoms parcel of a cargo, and that the defendant was not, therefore, bound to accept the timber.

S. Mary's Church, Taunton.—On Tuesday week, application was made in the Consistorial Court of Wells, before Dr. Wallis, for permission to erect iron gates, with brass ornaments, at the chancel screen of S. Mary's Church. Similar gates were erected recently, but removed on the order of the court, as they were not contained in the faculty. The application was made by Mr. Forster, proctor, on behalf of the churchwardens, Messrs. P. Taylor, S. Farrant, and J. Small, and was opposed by Mr. B. Pinchard, on the ground that gates separated the nave from the chancel, and supported the idea of greater sanctity in the latter.—Judgment reserved.

Our Office Table.

Application of Mica as a Substitute for Bronze.—A means has been found of greatly increasing the value of mica, by converting it into a colouring material. The mica is reduced to small pieces in a stamping mill, digested with chlorhydric acid, cleansed by washing, and sorted by sieves into sizes. The mica scales so prepared have a beautiful vitreous lustre, a silvery appearance, and bear in commerce the name of brocade crystal colours, or mica bronzes. The advantages of these brocades over the common metallic ones are:—1. They contain no unwholesome substance. 2. They possess a metallic lustre like the metallic brocades, and much surpass them in splendour. 3. Brown, blue, black, green, and red colours of rare brilliancy can be obtained, which is not the case with the metallic brocades. 4. They are not dimmed by sulphur vapours. The analyses by Drs. Cech and Schneider show that the colouring matter of the rose-brocade is cochineal; that of carmine is fuchsine; bright red, fuchsine and Havanna brown; violet, Hoffmann's violet; bright blue, Berlin blue; dark blue, probably impure aniline blue or Girard's violet; light and dark green, a mixture of aniline blue and curcuma; gold, curcuma; silver, the mica alone, &c.—*Journ. fur Prakt. Chemie.*

Dwellings for the Industrious Classes.—The twenty-sixth report of the directors of the Metropolitan Association for Improving the Dwellings of the Industrious Classes, presented to the shareholders at the annual meeting last week, after giving details of the receipts and expenditure in connection with each block of buildings belonging to the company, the mortality in each, and other particulars, went on to say that the bad debts this year, out of an average of 770 tenants, amount to £20 1s. 5d. only, or not one halfpenny in the pound upon the gross rents received—viz., £11,510 10s. The deaths upon the entire property of the association have this year been 60 out of an average population of 3827, of which 39 were of children under ten years of age. It appears, therefore, that the average rate of mortality in the buildings of the association has been under 16 per 1000, whilst that of the metropolis generally has exceeded 24 per 1000. In the revenue account there appeared a payment of £462 8s. 3d. on account of the Soho chambers. Of this sum £369 7s. was paid for dilapidations, and the remainder is the balance of rent, rates, &c., to the termination of the lease. Notwithstanding this heavy charge, and the fact that the capital invested in the course of the year in the completion of the Alexandra-cottages and the conversion of Howard-buildings has yielded returns during only a part of the year, still there is a surplus, after paying all current expenses, of £5227 15s.. The directors recommend that a dividend of 4½ per cent. be paid to the shareholders, free of income-tax, and that the balance of £442 17s. 8d. be carried to the guarantee fund.

Society of Engineers.—Arrangements have been made for a visit of the members of the Society to the brewery of Messrs. Truman, Hanbury, Buxton and Co., and to the Great Eastern Railway works, on Monday, the 11th of July, 1870. Members and Associates to meet at Truman's Brewery, 174, Brick-lane, Spitalfields, at 12 o'clock, noon, on that day. Visit to the Great Eastern Railway Locomotive Department, at Stratford, at 3 o'clock, p.m.

New Streets in Connection with the Holborn Viaduct.—On Monday afternoon a new street in connection with the Holborn Viaduct was opened for traffic. It runs from S. Sepulchre's Church on the Viaduct, and over the London, Chatham, and Dover Railway, into the Farringdon-road. The entire length of this street is about 600ft. with a carriage-way of 30ft., and two footways of 10ft. each; and as the gradient is but 1 in 45, its public advantage will be at once apparent. Another new street is in course of formation from the Holborn-circus to Fleet-street, and the footway on that part of the eastern part of it leading from Holborn-circus to Shoe-lane was also opened to the public. The width of this street and of the pavements will be the same as in the case of the other street above referred to.

Proposed Assistant Surveyorship of Public Works.—Referring to the contemplated appointment of an Assistant Surveyor of Public Works, an evening contemporary ventures to hope that if this new office is to be created it will be of a practical nature. A surveyor who should make it his business to walk about and inspect works in progress, whether under the direction of Government or private capitalists, without waiting to have things brought officially under his notice, would form a most useful addition to the public service. Had an officer charged with a mission of this character strolled down the Thames Embankment, and brought his æsthetic faculties to bear upon the marvellous station erected by the Metropolitan District Railway Company at the entrance to the new Blackfriars Bridge, there would at least have been a commotion and a remonstrance, and the locality might not have been disfigured as it now is. What we want (says our contemporary) is an official thoroughly well versed in the principles of engineering and architecture, who might represent the public interests independently, and, if he did nothing else, bring public opinion to bear upon matters which require to be considered before they are past remedy. The practical functions of a censor of art and utility might be very conveniently performed by an officer so empowered, and responsible directly to the First Commissioner of Works, with the guarantee for publicity which would be secured by the presentation of his reports at short intervals in a shape open to the public.

London Graveyards. — The *Commercial World* says:—"Before the London graveyards were permanently closed by Act of Parliament, their condition, choked and infected with human remains, had become an ever-present danger. That special form of a crying evil has disappeared, but in its essence and germ it is still in our midst. The objections which thirty years ago were urged against the London graveyards as to their position and state are fast becoming equally applicable to all the more central cemeteries. Palpably several of them long ago become entirely divested of their suburban character. Bearing in mind the vast increase of the population, and consequent increase of mortality, and the position of those cemeteries, we may be said to 'bury our dead in the midst of the living' in a scarcely less degree now than before the visitation of cholera and the persistent teachings of Drs. Sutherland and Southwood Smith, and their fellow labourers in the cause of sanitary reform, had taught us the utility of better ideas. From reports which reach us it would appear we are fast forgetting those scientific lessons. Instead of persistently and peremptorily refusing to use our mural cemeteries, in some instances we have to the utmost enlarged their borders, and, therefore, to future generations, increased their capacity of mischief. Besides, we are probably only preparing additional work for future excavators and railway engineers."

The Water Supply of Jerusalem.—A letter from Jerusalem says:—"The Abbé Richard, so well known for his cleverness in discovering water-springs, has just made a lengthened stay here, and on the invitation of the governor, Kiamil Pacha, has made some hydro-geological surveys in the town and environs. The result is most satisfactory. According to the learned abbé there are two means of supplying the Holy City with good drinking water in sufficient quantity—1. By wells to be bored in the rocks, in the town and close by outside. 2. By aqueducts bringing the desired liquid, first to the sealed well (the *fons signatus* of the Canticle of Canticles), then to the reservoir of Arroub, and finally to Jerusalem. By either of these methods the scarcity of water felt every year would be definitively overcome. The Abbé Richard was in favour of the second plan, in consequence of the better quality of the water and the larger quantity to be thus obtained."

INSTITUTION OF SURVEYORS.—The annual dinner of this Institution was held on Monday evening in the large hall of Willis's Rooms, and was attended by a numerous party of members and associates, Mr. Richard Hall, the president for the current year, occupying the chair. After the usual loyal and patriotic toasts (that of "The Army and Navy" being responded to by Lieut. Col. G. A. Leach, R.E.) had been given, the chairman presented to the Hon. Sec., Mr. J. W. Penfold, the service of plate which had been subscribed for by the members and associates, in recognition of his services in connection with the foundation of the Institution, and during the subsequent two years. Mr. J. H. Lloyd proposed, in eloquent terms, the toast of "Prosperity to the Institution," and after his health, and that of the Chairman, and of the Past President, Mr. John Clutton, had been duly honoured, the proceedings terminated. It was mentioned, incidentally, that the Institution numbers 240 members and associates, including a large proportion of the leading surveyors.

THE BRADFORD TOWN HALL.—A special meeting of the Bradford Corporation was held on Wednesday, for the purpose of varying a resolution by which the expenditure upon the new structure was restricted to £40,000. The original tender of Messrs. J. Ives and Son, of Shipley, was £39,535, but certain additions are suggested, which the committee recommended for adoption, increasing the amount to £43,730; and it was, therefore, necessary, before the contracts were signed, that the subject should again be brought before the council. The original resolution was varied in accordance with the recommendation of the Finance and General Purposes Committee, and the new hall will, therefore, shortly be commenced.

Chips.

The Independents of Yarmouth have just completed a new chapel in Middlegate-street. It is in the Gothic style, and has cost upwards of £3000.

The statute of the late Mr. Peabody, near the Royal Exchange, has been again uncovered. It is now fixed on its permanent pedestal, and is surrounded with iron railings with gilt tops.

The total cost, up to the present time, of the Thames Embankment has been £1,650,000.

The Oxford Architectural and Historical Society recently visited Warwick Castle. The general opinion of the members, after a thorough inspection, is that none of the existing buildings are earlier than the reign of Edward III.

Saturday week was a day of great rejoicing at Maidenhead for Churchmen, as on that day was finished the tower and building of S. Luke's Church, after designs by Mr. G. R. Clarke, to accommodate 900 people.

During the taking down of the house No. 48, London Wall, recently, a section of the old city wall, built upon piles, was found. The piles were quite sound when taken up, and were about 7ft. long.

The sale (by tender) of the materials and fittings of the Church of Allhallows, Staining, Mark-lane, took place on Wednesday last. The tower is to be left standing,

The construction of the new promenade pier at Westward Ho, has been commenced. Mr. Inman, C.E., is the resident engineer.

A new market at Spennymoor was opened on Wednesday last. A town hall at the same place is in course of construction.

The total sum paid and promised to the Bishop of London's Fund is now £402,000. Five churches have been consecrated since the beginning of the year, while two others are in course of erection. The Haberdashers' Company is prepared to give £3000 towards building a church at S. Peter's Hoxton.

New schools at Croscombe, near Wells, built through the munificence of the late Mr. Townsend, surveyor, of Bristol, were opened on Wednesday week by the Bishop of Bath and Wells.

The guardians of the Bolton Union have been discussing the desirability, or otherwise, of making 400,000 bricks, upon land belonging to them, adjoining the workhouse, but no decision was arrived at.

S. Mark's Church, Fletcher-street, Bolton, has been temporarily opened, but it is far from finished internally, owing to want of funds.

It is proposed to add extensive additional infirmary accommodation at the Bolton Workhouse.

The new covered market at Preston is progressing satisfactorily, and will, it is expected, be completed at the end of the present month.

S, James's Church, Preston, is about to be rebuilt,

A new school-chapel is about to be erected for S. Paul's district, Preston, at a cost of £1,150.

The accommodation at Marlborough House being very deficient for the Prince and Princess's household, another story is to be added to the building,

Timber Trade Review.

The sale by auction yesterday at the Baltic Sale Room, Threadneadle-street, consisted of—

29,390	Quebec yellow pine, deals, and battens.
3000	Taguenay white spruce ditto.
4600	Foreign yellow and white ditto.
500	Loads Dantzic fir timber.
220	Loads S. John's, &c., birch.
16,600	Miramichi, &c., white spruce deals, &c.
19,300	Christiana, &c., yellow ditto.
24,200	Swedish ditto.
6000	Petersburg and Riga white ditto.
6500	Norway white ditto.
2100	Swedish white ditto.
600	Dantzic deck deals.
30,700	Norway flooring boards.
22,000	Baltimore locust trenails, &c.,

Which were sold at the following prices:—

		£ s	£ s
Baltimore locust trenails	per 1000	5 15	to 6 0
Bathurst 2nd bright red pine	per Petg. std.	7 12 6	
Christinestadt handsawn white	ditto	6 5	,, 7 5
Ditto 2nd yellow	per 120 12 3 × 9	15 10	
Ditto 2nd ditto 2½ × 6½	per 120 12ft	7 5	
Christiana 2nd yellow ditto	Ditto	7 0	
Ditto 3rd ditto ditto	Ditto	6 5	
Ditto 3rd white ditto	Ditto	5 15	
Dram 3rd yellow ditto	Ditto	6 10	
Ditto 3rd white ditto	Ditto	5 10	
		s d	s d
Dantzic crown deck	per 40ft.	18 0	
Ditto second crown	Ditto	16 0	
Ditto brack	Ditto	14 0	
Ditto common middling timber	per load	50 0	,, 73 0
Ditto good middling	Ditto	85 0	
		£ s	£ s
Fredrickstadt yellow	per 120 12 2½ × 6½	5 15	
Gefle 1st yellow	Petg. std.	8 5	,, 11 10
Gothenburg white	Ditto	7 10	
Husum 3rd yellow	Ditto	9 10	
Miramichi unsorted spruce	per 120 12 3 × 9	13 0	,, 14 0
Nyham yellow	per Petg. std.	10 0	
Norway yellow	per 120 12 2½ × 6½	5 15	
Porsground yellow	Ditto	5 0	
Petersburg 1st white	per Petg. std.	7 5	,, 9 15
Ditto lathwood	per c.b. fthm.	6 0	,, 6 15
Quebec 1st bright yellow 12ft; 3 × 8 and 9	per Petg. std.	15 5	
10 to 12ft. 3 × 7	Ditto	15 5	
10 to 13ft. 3 × 8	Ditto	14 15	
Ditto 1st dry floated 12ft. 3 × 11	Ditto	17 0	
12ft. 3 × 7	Ditto	13 0	
10ft. 3 × 12 to 21	Ditto	14 0	
Ditto 1st floated 12ft. 3 × 11	Ditto	16 0	
Ditto 2nd bright 12ft. 3 × 11	Ditto	12 0	,, 13 5
11ft. 3 × 11	Ditto	11 15	
12ft. 3 × 9	Ditto	12 5	
Ditto 2nd dry floated 12ft. 3 × 11	Ditto	12 10	
Ditto 2nd floated 12ft. 3 × 11	Ditto	12 0	
12ft. 3 × 11 to 20	Ditto	12 0	
Ditto 3rd bright 13ft. 3 × 11	Ditto	10 0	
12ft. 3 × 11	Ditto	10 0	
12ft. 3 × 9	Ditto	9 5	
Ditto 3rd dry floated 12ft. 3 × 11 to 23	Ditto	9 10	
12ft. 3 × 11	Ditto	9 10	
Quebec puncheon staves	per mille	No bids.	
		s d	s d
Ditto birch timber	per load	61 0	to 63 0
		£ s	£ s d
Riga crown white	per Petg. std.	8 10	,, 8 12 6
Ditto half-crown	Ditto	7 15	
Sundswall white	Ditto	6 0	
Ditto fir timber	per load	1 5	
			£ s
Ditto 1st and 2nd yellow	per Petg. std.	9 0	,, 10 5
Ditto 3rd yellow	Ditto	7 15	,, 9 0
Ditto 4th yellow	Ditto	7 0	,, 7 15
Soderham yellow	Ditto	10 0	,, 10 5
		s d	
Stradhella spars	per foot run	5 8	
		£ s	£ s
Saguenay 1st spruce	per 120 12 3 × 9	12 5	,, 13 15
Sannesund white	per Petg. std.	5 10	,, 6 0
Ditto 1st yellow	per 120 12 3 × 9	20 0	,, 20 5
St. John's spruce	Ditto	12 0	,, 14 0
Ditto birch	per load	No bids.	
Skonwick yellow	per Petg. std.	7 5	,, 8 10
Saltkallen 1st and 2nd yellow	Ditto	10 10	
Ditto 3rd yellow	Ditto	8 10	,, 9 10
Vefsen 1st and 2nd white	Ditto	9 10	
Wifsta wharf yellow	Ditto	8 0	,, 9 0

THE Aroa Timber Company have issued a prospectus. They appear to have obtained a 31 years' concession of valuable forests in Venezuala, chiefly consisting of mahogany, cedar, fustic, and lignum vitæ. By their calculations the cost price here per ton would be £4 13s. 6d. If they can command steady sales this would leave a handsome profit to the shareholders. Messrs. Churchill and Sim are said to have reported favourably on the wood already sent over.

LATEST PRICES OF MATERIALS USED IN CONSTRUCTION.

TIMBER.

	£ s.	£ s.
Teak, load	12 0	13 0
Quebec, red pine	3 15	4 15
,, yellow pine	4 0	4 15
St. John, N.B. yellow	0 0	0 0
Quebec oak	5 15	6 5
,, birch	3 15	5 0
,, elm	4 5	5 5
Dantzic oak	4 5	6 0
,, fir	2 5	4 5
Memel fir	2 10	3 15
Riga	2 17	3 2
Swedish	2 0	2 13
Masts, Queb. red pine	3 10	5 5
,, yellow pine	3 10	5 5
Lathwood, Dant. fm.	3 15	5 10
,, St P'burg.	5 10	6 10
Deals, pr C., 12ft by 3 by 9 in.		
Quebec, white spruce	12 0	17 0
St. John, white spruce	13 10	14 0
Yellow pine, per reduced C.		
Canada, 1st quality	16 0	17 0
2nd do.	12 0	13 10
Archangel, yellow	11 0	12 0
St. Petersburg, yel.	11 0	12 0

	£ s.	£ s.
Finland	7 0	8 0
Memel	7 0	9 0
Gothenburg, yellow	9 0	10 0
,, white	8 0	9 0
Gefle, yellow	10 0	11 10
Soderham	8 0	9 10
Christiania, per C., 12 ft. by 3 by 9 in yellow	10 0	12 10
Flooring Boards, per sq. of 1in., first yel.	7 6	10 6
First white	7 0	9 6
Second qualities	6 0	7 0
PUMICE STONE pr tn	6 0	8 0
OILS, &c.		
Seal, pale .. per tun	38 0	0 0
Sperm body	86 0	88 0
Cod	41 0	0 0
Whale, Sth Sea, pale	37 10	38 0
Olive, Gallipoli	51 0	0 0
Cocoanut, Cochin, tun	44 0	45 0
Palm, fine	39 0	39 10
Linseed	31 3	0 0
Rapeseed, Eng. pale	44 10	45 0
Cottonseed	29 0	34 10

METALS.

LEAD:—

Pig, Foreign	per ton	17 12 6	17 15 0
,, English, W.B.	do.	19 5 0	0 0 0
,, Lead Co.	do.	18 12 6	18 15 0
,, Other brands	do.	18 0 0	18 5 0
Sheet Milled	do.	18 10 0	0 0 0
Shot, Patent	do.	21 0 0	0 0 0
Red or minium	do.	19 15 0	20 10 0
Litharge, WB	do.	0 0 0	0 0 0
White dry	do.	25 10 0	30 0 0
,, ground in oil	do.	0 0 0	0 0 0

COPPER:—

British—cake and ingot	per ton	73 0 0	71 10 0
Best Selected	do.	75 0 0	72 10 0
Sheet	do.	76 0 0	78 0 0
Bottoms	do.	80 0 0	0 0 0
Australian	do.	73 0 0	75 10 0
Spanish Cake		0 0 0	0 0 0
Chili Bars	cash	68 10 0	69 0 0
,, refined ingot		71 0 0	73 0 0
el. Metal Sheathing & Rods	per lb.	0 0 6⅝	0 0 6¾

Trade News.

WAGES MOVEMENT.

BRISTOL ARBITRATION BOARD.—A general meeting of operative carpenters and joiners of Bristol was held on Tuesday night for the purpose of electing operative members of the arbitration board in the place of those who have been selected by ballot to retire. The retiring members were Messrs. W. B. Harris, Tucker, Shorney, and Salter, of whom Messrs. Harris, Shorney, and Salter were re-elected, Mr. C. Jeffreys being added to fill Mr. Tucker's place. Mr. Lewis, a member of the board, having resigned, Mr. H. Heath was appointed in his stead. A letter from Mr. Lewis Fry, the umpire, similar to that read at the meeting of master builders on the previous evening, was read, in which he expressed his opinion that it was undesirable that he should attend a meeting of employers or operatives separately. Mr. Westaway, in the course of the business, complained of the indifference of many of the operatives in regard to the arbitration board, and expressed his surprise at seeing only a few present, although the meeting was public and open to non-society as well as to society men. At the conclusion of the business a vote of thanks was passed to Mr. Lewis Fry for his impartiality and courtesy in his position as umpire.

THE BRADFORD CARPENTERS AND JOINERS.—On Monday, agreeably to a resolution come to recently, the operative joiners who do not receive the advance of a halfpenny an hour recommended by the Board of Arbitration struck work and left the employment of the defaulting employers. About 127 men turned out, and 400 remain at work where the advance has been conceded The men express a sanguine hope that their request will be acceded to in a few days.

TENDERS.

CRICKLEWOOD.—For work at Hill-side, Cricklewood, in finishing 5 houses for J. Westwood, Esq., Manor House, Dulwich. Frank E. Thicke, Esq., 37, Norfolk-street, architect:—

Foster	£3873
Gammon	3791
Macey	3700
Merritt & Ashby	3331
C. A. Hailey	3283

HERNE-HILL.—For the erection of a new wing, conservatory, stabling, &c., and alterations, to house at Herne-hill, S.E., for John D. Welch, Esq. Mr. W. H. Powell, architect. Quantities supplied by Mr. H. J. Harris:—

Downs	£2706
Colls and Sons	2638
Mansfield, Price, and Co.	2600
Manley and Rogers	2577
Jackson and Shaw	2520
Brass	2488

HOLLOWAY.—For the several wood fittings (including those for the dining-hall, chapel, and board-room buildings) at the new workhouse, Upper Holloway, for the Board of Guardians, St. Mary, Islington. R. H. Burden, architect:—

Nutt (accepted)	£3725

For the several gas-fittings to the above:—

Faraday & Son (accepted)	£556

KENSINGTON.—For building house on plot 15, Kensington High-street Improvement (exclusive of party-walls) for James Broadbridge, Esq. Mr. Josiah Houle, architect:—

Chamberlain Brothers	£1315
Macey	1257
Cooke & Green	1147
Cowland	1140
Langmead and Way	1130
Stimpson	1125
Temple and Forster	1125
Scrivener and White	1078

Kent.—Tenders for additions to the union workhouse, Eabtry, near Sandwich, Kent. Mr. T. E. Knightley, architect:

Crab and Vaughan	£5700	0	0
Nightingale	5440	0	0
Wilson	5200	0	0
Matthews	5100	0	0
Smith	5040	0	0
Gibbons	4964	4	8
Dlune and Wise	4890	0	0
Wigmore	4885	10	0
Coleman	4883	10	0
Woodcock	4849	0	0
Cotten and Davis	4844	0	0
Dowl, Dove & Co.	4763	0	0
Sollett	4620	0	0
Cook	4589	17	9
Chamberlain	4568	0	0
Richardson	4550	0	0
Adcock and Rees	4497	0	0

Kingsland.—For 4 shops, with fronts complete, at Kingsland Green, for the North London Railway Company. Mr. E. H. Horne, architect:—

Sewell & Son	£2847
Mark	2787
Crabb & Vaughan	2767
Kelly Brothers	2643
Scrivener and White	2578
Watts	2565
Hill, Keddell, and Waldram	2550
Wicks, Bangs & Co. (accepted)	2526

Leavesden Woodside.—For roads and excavations, &c., at St. Pancras Schools.

Killingback and Radley	£1391
Mann	1272
Wigmore	1270
Tassell	1150
Nicholson and Goddard	1119
Cole	853
Young	740

South Wales.—For the erection of a villa at Cardiff. Mr. W. D. Blessley, architect. Quantities supplied:—

W. Seager	£700
Smith and Pring	690
S. Shepton	630
D. G. Price (accepted)	607

South Wales.—For new bay window and porch to Wesley House, Cardiff. Mr. W. D. Blessley, architect:—

W. Seager (accepted)	£83

Surrey.—For mansion and offices near Leatherhead Surrey, for W. Lee, Esq. T. Royse Lysaght, Esq., architect:—

Keeble	£9228
I'Anson	8912
Gammon and Son	8859
Holland and Hannen	8836
Mansfield and Price	8754
Phillips and Son	8567
Trollope	8563
Shearburn	8536
Nightingale	8500
Perry and Coy	8417
Higgs	8370
Simpson	8330
Conder	8260
Hill and Sons	8148
Brass	7726
Batchelar	7459

◆

CONTRACTS OPEN FOR BUILDING ESTIMATES.

Liverpool Central Station Railway, July 13.—For the construction of the above railway and works. Edward Ross, Secretary, Secretary's Office, London-road Station, Manchester.

London, July 19.—**Ancient Order of Foresters.**—For the performance of certain works required in the erection of the intended Foresters' Hall, at Wilderness-row, Goswell-street, S. Luke's. Jno. McTernan, Secretary, Ancient Order, of Foresters, L.U.D. Offices, 16, Essex-street.

Lancashire and Yorkshire Railway, July 13.—For painting stations, &c. Engineer's office, Hunt's Bank, Manchester.

Basingstoke Union, July 14.—For the erection of boys' dormitory. George Lear, Clerk.

Great Northern and Midland Railway Companies, July 13.—For the construction of the Liverpool Central Station Railway. E. Ross, Secretary, London Road Station, Manchester.

Trinity House, London, July 11.—For the erection of new dwellings and additions and alterations to the Flamboro' Lighthouse, near Bridlington, in the county of York. Robin Allen, Secretary.

Trinity House, London, E.C., July 11.—For the construction and erection of a First order lighthouse lantern, iron lantern gallery, floor, and railing, at the Flamborough Lighthouse, near Bridlington, in the county of York. Robin Allen, Secretary.

S. Leonard's-on-Sea, July 13.—For the erection of schools and teacher's residence, in the parish of S. Paul. Messrs. Jeffery and Skiller, Architect, 4, Havelock-road, Hastings.

Barnet Union, July 19, for the repairs and work to be done to the roof of the workhouse at Barnet. Stanley Harris, clerk to the Guardians, Wood-street, Barnet.

Sheepscar, July 27.—Eor the erection of a Parsonage house, at Sheepscar. George Corson, Architect, 5, South Parade, Leeds.

Salford, July 14.—For the purchase of oak fittings in the room of the Town Hall, Salford, recently used for the purpose of the Salford Hundred Courts of Record. George Brett, Town Clerk, Town Hall, Salford.

Hounsditch, July 12.—For building two houses. Morris Hart, and Co., 4, Coleman-street Buildings, Moorgate-street.

Taunton and Somerset Hospitals, July 16.— For the erection of a building behind the hospital, comprising two convalescent wards, with corridors communicating with the hospital, the extention of the eastern wing, and the erection of a small building in the hospital garden. Pinchard and Son, Secretaries, Taunton.

Leeds, July 15.—For the construction of tank, sluices, dams, &c., at the Sewage Outfall, Knostrop. Capel A. Carwood, Town Clerk.

Tottenham, July 13.—For sundry works, repairs, &c., to the Old Independent Chapel. Robert Walker, architect, 10a, King's Arms Yard, Moorgate-street.

War Department Contracts, Manchester, July 13.—For supply of materials and performance of such work as may be required in re-constructing left wing, Hulme barracks. W. G. Hamley, Colonel Commanding, Royal Engineer Office, Manchester.

Rickmansworth, July 11.—For building a church on Croxley Green in the parish of Rickmansworth. John Norton, architects, 24, Old Bond-street, W.

Bradford, July 11.—For the erection of an hotel near to the Bolton Bridge, Bradford. Taylor and Garthwaite, Architects and Surveyors, Bradford.

Portsmouth, July 13.—For the construction of works of private or house draining in the Borough. S. J. Elliott, Clerk to the Board.

Bishop Stortford, July 13.—For supplying and laying about 30,000 yards of stoneware pipes of various sizes, and the construction of manholes, inspection shafts, river crossings, &c. William Gee, Clerk to the Board, Bishop Stortford.

Peterborough, July 16.—For the fencing and formation of roads on the Westgate estate, Peterborough. James Ruddle, North-street, Peterborough.

Lewisham District Board of Works, July 20.—For the supply of road materials, comprising flints, granites, and gravel. Samuel Edwards, Clerk to the Board, Grove-place, Lewisham.

Ripon, July 23.—For the erection of a Congregational Church, schools, parsonage, fences, and outbuildings. J. R. Prichett, F.R.I.B.A., Darlington.

Denton, (Staffordshire), Aug. 4.—1st. For the erection of a new south wing, for S. Chad's College. 2nd. For the erection and completion of kitchen, Laundry, gas house, and offices. Architects, Mr. W. Slater and Mr. R, H. Carpenter, 4, Carlton Chambers, 4, Regent-street, London, S.W.

◆

BATH STONE OF BEST QUALITY.

Randell, Saunders, and Company, Limited Quarrymen and Stone Merchants, Bath. List of Prices at the Quarries and Depôts; also Cost for Transit to any part of the United Kingdom, furnished on application to

BATH STONE OFFICE,
Corsham, Wilts.

Advt.]

◆

BANKRUPTS.

TO SURRENDER IN THE COUNTRY.

Richard King, Plumstead, builder, July 25, at 12—John Onions, Netherton, near Dudley, ironmaster, July 15, at 12—Levi York, Wednesbury, engineer, July 13, at 12.

ACT 1869.—PUBLIC EXAMINATION.

G. Tasker, Teignmouth, Devon, builder, July 6.

DIVIDEND MEETINGS.

H. Wright, Stoney Stratford, plumber, July 13—J. Farmer, Ironbridge, Salop, builder, July 29—W. W. Davey, Beccles, plumber, July 19—W. Cutting, Beccles, engineer, July 19—C. Goldsmith, Beccles, bricklayer, July 19.

DECLARATIONS OF DIVIDEND.

H. R. Minns, Bristol, gas fitter, div., 1s. 2½d.—D. D. and D. Offley, Moxley and Smethwick, ironmasters, div. 1 1-16d.—J. Mandelick, Liverpool, metal broker, div. 4d.

PARTNERSHIPS DISSOLVED.

C. B. and T. Eardley, Newcastle-under-Lyme, painters and paperhangers—Halstead and Co., Bury, Lancashire, engineers—Brittain and Co., Chesterton, engineers—Winn and Collins, Birmingham, engineers—Meredith Brothers, Bankside, sawyers—Vick and Jackson, Pentonville-road, house painters—Kay and Butterworth, Little Lever, near Bolton, masons—Thompson and Noble, Liverpool, consulting engineers—W. and W. Osmond, Salisbury, stonemasons—Cockell and Hattersley, Wakefield, ironfounders—J. and W. Musto, Charles-street, Mile End New Town, engineers—Wright and Butler, Birmingham, gas stove manufacturers.

Partnership.—A Young Architect, just out of his articles with a gentleman in large practice in a midland town, is desirous of an ENGAGEMENT with a first-class house in London, or the country, to improve himself in practical work for a year or two with a view to partnership or purchase. References exchanged.—Apply S. R. S., Brightwell Farm, Wallingford, Berks.

Dry Earth Closets and Inodorous House Commodes. The best system; all self-acting; do not get out of order; low price, good for the bedroom, the house, the garden.—Patentee and Manufacturer, JOHN PARKER, Upholsterer, Woodstock, Oxford. Agents wanted.

Royal Polytechnic.—"Sand and the Suez Canal," by Professor Pepper.—Musical Entertainment, by George Buckland, Esq., "The Heart of Stone," with Spectral Scenes. American Organ daily. Dugwar's Feats and other attractions, all for One Shilling. "The Great City" at half-past 1. Suez Canal, at half-past 2 and a quarter to 8. Heart of Stone, at 4 and 9. Dugwar's Feats, at half-past 3 and quarter past 7. Open 12 to 5 and 7 to 10.

John Gosnell and Co.'s Cherry TOOTH PASTE is greatly superior to any tooth powder, gives the teeth a pearl-like whiteness, protects the enamel from decay, and imparts a pleasing fragrance to the breath.
Angel-passage, 93, Upper Thames-street, London.

The Best and Cheapest Paint for Farm Buildings, Stables, Conservatories, Gardens Park Railings, and all other outdoor work; shutters in Iron, Stone, Stucco, or Wood, is JAY'S PATENT METALLIC PAINT. It covers well, dries quickly, presenting a hard glossy surface, and never blisters or cracks. The price is half that of ordinary paints, and it goes twice as far, one coat being equal to two. Prices, ready mixed for use, in all colours, 5s. 6d. per gallon, 27s. per cwt.; red, chocolate, and black, 4s. 6d. per gallon, 21s. per cwt. THE PATENT ADAMANTINE PAINT for covering iron, flat surface, dries in twenty minutes, as hard as the iron itself. 5s. per gallon, 24s. per cwt. Orders for 1 cwt. and upwards sent carriage free to any railway station in England, on receipt of remittance addressed to Wm. P. Owen, Woodham Works, Vauxhall Station, S.E.

Half a Million has been Paid
by the
RAILWAY PASSENGERS' ASSURANCE COMPANY,
as COMPENSATION for ACCIDENTS of all kinds (riding, driving walking, hunting, &c.)
An Annual Payment of £3 to £6 5s. insures £1000 at Death, and an Allowance at the rate of £6 per week for Injury.
A BONUS TO ALL POLICY HOLDERS OF FIVE YEARS' STANDING HAS BEEN DECLARED, PAYABLE IN AND AFTER 1871.
For particulars apply to the Clerks at the Railway Stations, the Local Agents, or at the Offices,
64, Cornhill, and 10, Regent-street, London.
WILLIAM J. VIAN, Secretary.

IMPROVED DWELLINGS FOR THE PEOPLE.
THE ARTIZANS', LABOURERS', and GENERAL DWELLINGS COMPANY
(Limited).
Capital £250,000. Shares £10. £1 paid per Share.
President—The Dean of WESTMINSTER.

Arbitrators.	Local Council.
Right Hon. Earl Shaftesbury.	Thos. Bazley, Esq., M.P.
Right Hon. Earl Lichfield.	Jacob Bright, Esq., M.P.
Lord Elcho, M.P.	John Cheetham, Esq., M.P.
&c., &c., &c.	W. R. Callender, jun., Esq., M.P.

W. Swindlehurst, Manager and Secretary.
The Company is especially formed to erect improved workmen's dwellings on the co-operative principle. No beershop or tavern to be erected on the Company's property. Profits realised by workmen employed on the buildings 40 per cent. Deposits received at 5 per cent. Prospectuses on application, enclosing postage stamp. Office 1, Great College-street (opposite the House of Lords), Westminster, London.

Sovereign Life Office, 48, St. James's-street, and 110, Cannon-street, London. New Policies were issued in 1869 for £311,250, at an average of £680 each. The Life and Annuity Funds connected with the Office exceed £600,000. Advances are made on Freeholds, &c.; also, to a limited extent, on first-class Personal Security.
H. D. DAVENPORT, Secretary.

Price 4s, Post Free, 4s. 4d.
Laxton's Builders' Price Book.
For Architects, Engineers, Builders, Contractors, Surveyors, and all the Building Trades.
For fully fifty years this work has been considered the chief authority on matters connected with the Building Trades. Its use, even on one occasion, will probably repay the cost of the book ten times over, and instances will continually occur in which the consultation of its pages will effect a saving of many pounds.
London: MORGAN and CHASE, 38, Ludgate-hill.
And may be ordered of any bookseller in the kingdom.

NEW EDITION OF SIR W. FAIRBAIRN'S WORK ON IRON.
In 8vo. with 6 Plates and 126 Woodcuts, price 16s. cloth
The Application of Cast and Wrought Iron to Building Purposes. By Sir W. Fairbairn, Bart. C.E. Fourth Edition, thoroughly revised, with Additions, including Experiments on *Trussed Beams*, and Researches on the properties of *Steel* and *Homogeneous Iron* as used in Architecture, Building, and Engineering.
Works by the same Author, fully illustrated.
IRON SHIP BUILDING, its History and Progress to the Present Day (lately published), price 18s.
TREATISE on MILLS and MILLWORK. Second Edition, carefully revised, of both Volumes, price 16s. each.
USEFUL INFORMATION for ENGINEERS, First, Second, *and* Third Series, price 10s. 6d. each.
London: LONGMANS, GREEN, and CO. Paternoster Row.

Rome.—A Catalogue of upwards of Eighteen Hundred PHOTOGRAPHS of the ANTIQUITIES of ROME, with the Dates, either Historical or Approximative, prepared under the direction of John Henry Parker, Hon. M.A. Oxon, F.S.A., NOW EXHIBITING in Cundall's Gallery, 168. New Bond-street. 8vo. 1s., including Admission to the Gallery.

Now ready.
The Timber Merchant's Pocket Companion. Fourth Edition. By CHARLES GANE, Timber Merchant, Wisbeach. Free by post 4 stamps.

Preparing for Publication, a new ILLUSTRATED BUILDERS' PRICE BOOK for 1871. Price 4s.; free per post, 4s. 4d., stamps. Orders for advertisements and the book received as under, London: to be published by R. A. SPRIGG, 106, Great Russell-street, who has been a publisher for 30 years of architectural and engineering works.

A Substitute for Paint, and at HALF the cost.—STEPHENS' DYES or STAINS for WOOD
Mr. STEPHENS has been kindly permitted to make public the following extract from a letter addressed to him by the Rev. R. H. CHICHESTER, of Chittlehampton, near South Molton:—
"The effect produced by the Staining Fluid and Varnish has given such entire satisfaction, that the parishioners have requested me to procure five times the quantity now paid for, in order to finish the church."
H. STEPHENS, Chemist, 171, Aldersgate-street, late 18, St. Martin's-le-Grand, E.C.

Enamel Varnishes, of Superior Quality, that dry well, look well, and wear well, from 8s. per gallon.
Samples and prices sent free on application to W. NAYLOR. Varnish Manufacturer, 4a, James-street, Oxford-street, London, Also Manufacturer of Oak Stains.

Light	4s. per gallon.
Middle Tint	5s. "
Dark Oak	6s. "

The Granitic Paint, the best for the finest painting and the roughest work. Used in the Crystal Palace, Sydenham, by the Trinity House, the Brighton and Metropolitan Railways, and very many Decorators, House Painters, Engineers, Architects, Contractors, Ironmasters; and Shipbuilders.
39a, KING WILLIAM-STREET, LONDON-BRIDGE, LONDON, E.C.

Damp Walls Prevented by the use of the SILICATE ZOPISSA COMPOSITION, and porous bricks and stone, cement and plaster, preserved from decay.
39a, KING WILLIAM-STREET, LONDON-BRIDGE, LONDON E.C.

THE BUILDING NEWS.

LONDON, FRIDAY, JULY 15, 1870.

MANCHESTER ABBATOIRS COMPETITION.

THIRTY-FOUR architects have been found willing to compete for the trouble and bother of having to build some new slaughter-houses for the city of Manchester. Certainly the ages of faith are not past, and the credulity of mankind is still rampant, especially in architects. How thirty-four men could be found with such a large belief in themselves and the Corporation of Manchester is a mystery. That five or six architects in Manchester should compete for it is reasonable, but that any architect out of it should do so is inexplicable. Surely the record of competitions in general is enough to deter wise men who have no local influence from joining in them, and the northern competitions particularly record that none but a local deserves the prize. Recal to mind the Manchester Exchange competition, think of the Manchester Town-hall competition, remember Bradford, and then, ye hopeful ones, pause. We hardly need say that all the three prizes have fallen to Manchester men. No person capable of drawing a logical deduction can feel the slightest surprise at it, for when was it otherwise in Manchester? What we really do feel surprised at is that in some degree the decision is just, for, strange to say, the two best designs submitted are those to which the first and second prizes are awarded. There is no doubt that Mr. Darbyshire's and Mr. Salomans plans are by far the best-considered and the best adapted for their purpose of any sent in, and that their merits are so equal that it is not possible from the cursory examina- we have been able to give to the plans to say whether Mr. Darbyshire's or Mr. Salomans' is the better, and we therefore accept as just the committee's decision, so far as these two plans are concerned. Not that we think it would have made the slightest difference in the result had these two plans been the worst instead of the best, but by the doctrine of chances, the present system of competition must bring the best to the top sometimes, and this is one of those times. In Mr. Darbyshire's design there is not the slightest suspicion of architecture as an art. It is simply an assemblage of sheds for the slaughter of beasts and the sale of their carcases, and from a ratepayer's point of view this is undoubtedly a merit. The arrangement of the plan is simple. The carcase market forms the front of the building, and behind this comes two blocks of slaughter-houses, the one for wholesale, and the other for retail butchers; behind this again is the tripery and other abominations, and the slaughter-house for pigs. This latter we think very inadequate in size, being only about 24ft. by 36ft., and considering that Manchester is a very fatal place to pigs, and that their death rate rises to something like 1500 per week, there is not anything like space enough provided for them. There are a good many other faults in the arrangement of Mr. Darbyshire's design which will need correction before it is fit for execution, and its chiefest merit at present is the very careful study of its working accessories. Not that he is singular in this, for Mr. Salomans' design is almost equally well thought out—indeed, in some points better, and there is very much that is good in this design and of which we have no doubt the corporation will thankfully avail themselves. As architecture, the design is immeasurably beyond Mr. Darbyshire's; in fact, it is too good, and, by a singular want of the recognition of the fitness of things, Mr. Salomans not only covers his carcase market with the same kind of roof as he designed for the Art Treasures Collection, but calls attention to this fact in his report! He has imperial authority, however, on his side, for did not Napoleon (the Great, we mean) say that a market was "the Louvre of the people?" But yet between carcases and art treasures we detect a difference which we think even Mr. Salomans might have recognised. The arrangement is very similar in plan to that of Mr. Darbyshire, excepting that he has two entrances into the abbatoir yards, and Mr. Darbyshire has only one. Mr. Salomans is, however, much more considerate for the "unclean beast," and provides three times as much space for pig-killing as does his more fortunate competitor. His drawings are as carefully "got up" as they can be; Mr. Darbyshire was apparently so sure of winning that he didn't care to take any trouble about his. On one point there is a great difference between these two. Mr. Darbyshire says his designs will cost £16,000, and Mr. Salomans says his will cost £27,000. Now we are not in the slightest degree surprised at this variation. Nothing in the way of an architect's estimate does surprise us; we simply look upon it as a figure of speech, and not a figure of fact. But if Mr. Darbyshire can carry out his design for anything within a very vague approach to that sum, he will avenge the wrongs architects have received at the hands of builders in a manner very appropriate to the erection of slaughter-houses. Why Messrs. Pennington and Bridgen are rewarded with the third premium is not by any means clear. It is true they are Manchester architects, and it is equally true that they must have very powerful interest in the council; certainly there is but this to account for it, for there are many other designs much better than theirs, and some of them by Manchester architects too; so why they are the favoured recipients of the third prize is as yet unknown to us, but not unsuspected. On their plan there is very much waste space, and not only do their slaughter-houses abut directly on to the carcase market, but they absolutely draw attention to this wretched arrangement in their report, and are crass enough to consider it a merit. What little claim to architecture the design may have may be described as due to an Italian burlesque character, and the influences of Messrs. Pennington and Bridgen's friends must be great indeed when they can persuade the council that there is any merit whatever in such plans as these. Very much better is Mr. Lowe's design, and if he only had some of that influence he possessed in the Exchange competition, he might have been placed third here also, and that much more deservedly. He sends two designs; the first of them, in our opinion, vastly superior to the premiated plan placed third. Its architectural merits are far higher, and the arrangement far more convenient and more suitable to the sanitary well-being of the unsavoury place. Its architectural character is of a far higher standard than that of the premiated design, and, like it, is based on Italian traditions. There is much merit in Mr. Stephens' design, but he has been so anxious to study well mechanical dodges in detail arrangements that he has almost forgotten some of the leading requirements necessary to be observed in a building of this character. This, indeed, is a general failing, we are shown in many instances improved hooks for hanging up the carcase, whilst in the same design there is no possible means of removing the offal without taking it through the general market, and another design on strictly Gothic principles shows no means of getting the beasts into the slaughter-houses except by driving them through the carcase market. The proverbial bull in a china shop would have to resign in favour of one in a dead meat market had the designer of this plan been sufficiently well known to the corporation to ensure his design being selected. Of the general range of the other drawings we need hardly speak. Not a name of any value is attached to them; they are chiefly the work of very young men, and the work is very young indeed. The wiser, the older, and the more experienced men have evidently fought shy of a Manchester competition, and the consequence is that it is simply a large battle amongst little people. Even many of the best men in Manchester have had nothing to do with it, and the *naiveté* with which the only knighted Town Clerk in the kingdom announced that it was a singular coincidence that the three prizes had fallen to three Manchester architects, and that the successful competitor was favourably known to the Corporation from having worked for them before, was one of the most delicious bits of broad comedy we have of late encountered in official life. It would really save a great deal of trouble if corporate bodies would fight out the selection of an architect before hand. The ulterior result would be precisely the same, and the unfortunate innocents need not be massacred in public, nor should we ourselves be compelled to attend the execution. Of course there would be a good deal of heartburning, and much envy, hatred, and malice, but those thirty-one unfortunates would have been saved much trouble, much expense, and the bitter knowledge that without influence nothing else avails. One piece of advice we give them—Don't do it again, and if you are ever tempted to compete for anything far north turn over the columns of our past numbers and reflect on the lessons you may learn there.

◆

SCULPTURE AT THE ROYAL ACADEMY.

IT has become quite a habit with art critics to write about British Sculpture in a mournful, desponding strain, to allude to it more as a painful necessity than as an actual and living branch of our fine arts, and to deplore the loss of the good old days of sculpture, when, whether in the service of religion or for the mere love of the beautiful, it achieved its noblest works and attained its highest success. We do not wish to join the ranks of these grumblers, or to class ourselves with those who contend that sculpture is as dead to us as an art as Greek and Latin are to us as languages. But with the best intentions to weigh well the altered circumstances and conditions under which our sculptors labour, and the very different field open to them for their works, it is impossible on entering the hall surrounded by the grim file of ugly old gentlemen at the Royal Academy, not to feel that there is much that is wrong and false in the modern practice of this art.

It is hardly the place in a notice of an exhibition to lay down our views of what sculpture should be, and it would be much easier to show what it ought not to be at the expense of the works contributed; but in order to justify our observations, we may state briefly that we regard the position of true sculpture to be to the remaining five arts what poetry is to literature. We do not wish here to imply that both painting and music may not have in their noblest developments much of this character, but they have other aims and objects in which they may attain to excellence, whereas sculpture can really only be noble and great in an ideal field, and sinks into the mean commonplace whenever it attempts a realistic treatment, or is used for the purpose of mere portraiture or pictorial representation.

It is, however, on portraiture that our sculpture depends for its support, if not for its very existence, and as such it must be judged, leaving out all preconceived notions of idealism and the beautiful. We must confess that even in this field we have dreams of what might be done, and there is no reason why a portrait should not in many respects be enjoyable as a work of art, but it is here that so many of the busts fail. They give us no pleasure, they may interest us on account of the celebrity of the model, or they may be valuable to us as reminiscences of our friends, but in an art point of view they are worthless, and as art may not be judged. Why do so many select the latter portion of their lives as the time for immortality in marble? Men and women should be preserved to us only as they appeared to us in their prime—such as they were at the best and loveliest period of their existence, before they had become wrinkled with age and furrowed with care. The Queen is known to thousands of her subjects, and should be known and go down to posterity only as the fair young creature of our coins and postage stamps, and the portraits of mature years are, in this sense, for the most part, sculpture misapplied. But the sculptor, as an artist, can scarcely hope to change the course of popular sentiment, or to direct public opinion, and he must mould his clay or carve his marble in accordance with the taste and wishes of his patron, however much he may desire to educate his countrymen, and raise the standard of his art.

The portrait sculpture at the Academy this year presents us with few striking features, and except in those respects we have mentioned, has little we can find fault with or admire. The statuette of the Queen at the Spinning Wheel, 1125, savours rather of a well-known nursery rhyme upon which we can remember that our notions of royal avocations were founded. We rather pity Her Majesty in this central position, surrounded by the eight very dusty celebrities in their niches. But, to take the works in their catalogue order, we pass on to the Sculpture Gallery. No. 1042, bust of a lady, by J. Lawlor is an instance of a pleasant and successful portrait; so also are many of the children's heads, in which we have the freshness and grace of early life preventing the sculptor from invading the realms of caricature by an attempt to portray the facial deformities of advanced age. Notably pleasant in this way is Lilian, 1045, by T. A. Bickerton, and No. 1200, a Boy's Head, by J. Durham, A. As an instance of another extreme, we may point out the caricature No. 1054, by W. Davis. Mr. J. E. Boehm has an excellent bust of an old man, *etat* 79, No. 1102, but No. 1098, a bust in bronze, by Mr. G. Simonds, is more striking on account of its method of treatment than for any other reason. The title should surely have been "H. L. Pattinson, Esq. (in the character of Hercules)."

This gives us an opportunity of noticing the various methods of dealing with the shoulders, which appears to be, upon the whole, rather a bugbear to bust sculptors. In most cases the device of the hairdressor is adopted, and the head and neck of the model rises from a confused mass of folded drapery; in others, the artist makes a bold dash at nature and gives us a most carefully rendered cravat and shirt collar. Perhaps this is done in the case of individuals whose only noticeable peculiarities consist in their arrangement of these articles of dress. In others, again, we have the chest in all its natural beauty, but indefinitely prolonged downwards and outwards to superhuman dimensions to afford a base for the work of art to rest upon, instead of the meaningless little turned pedestal commonly employed for this purpose. This latter flesh treatment, as we may call it, is resorted to by Mr. E. Davis, in his bust of Dr. Quain, No. 1187, and we find it also in Mr. Wyon's work, No. 1188. No. 1202, by Mr. J. A. Acton, is a good likeness of Mr. Bright, and a good example of the use of the ordinary clothing in sculpture; while the larger proportion of the busts in the gallery show us the plan of introducing drapery, or, in the case of ladies, a decorous fringe of lace, as in No. 1150, by Miss C. M. Adams, and in the graceful bust of Mr. Birks, No. 1154, by Mr. J. Durham, A., in both of which cases, however, the lace is perhaps a trifle over-elaborated. No. 1185, Dr. Muspratt in marble, resting on the volumes of his work on Chemistry, is an affectation which savours rather of the commercial spirit. There are many reasons why medallion portraits are better than busts, and we regret that this art is so little practised; notice, however, a clever little head of Mr. A. S. Coke, by F. S. Potter, No. 1146.

We must conclude with a few observations upon the sculpture proper, which, as we have stated, we must judge upon a different footing to the portraiture. No. 1180, Blackberry Picking, is a pleasant figure of a girl by E. B. Stephens, A. No. 1184, a mezzo-relievo, by F. J. Williamson, from a subject in "Adam Bede," is an extremely well-grouped and agreeable work. No. 1195, Ariel, by F. M. Miller. This gentleman's work must be well known to the frequenters of our exhibitions. There is a great sameness about it, but it is not devoid of grace of outline and expression. Mr. T. Woolner's group of children in bas-relief, entitled "In Memoriam," is the best work of the kind we have seen for some time. It represents three girls and a boy, and is most probably intended for a church tablet. The entrance to the great room is guarded on either side by winged figures, memorial in character, No. 1167, by S. Ruddock, and a group of three figures entitled Memento Mori, by Count Gleichen, No. 1171. Extended wings are extremely difficult to manage in sculpture, and generally give exactly the opposite impression of what they are intended to give—looking heavy instead of light; this may be seen especially in the latter example. Scattered through the rooms are some very excellent groups representing Hercules strangling Antæus, sent up by students of the Academy in competition for the Gold Medal; especially clever is the group by H. Montford, No. 1093. Mr. Bell's bust of the figure of the United States, part of his group for the Albert Memorial, No. 1103, a colossal female head, wearing an eagle's feather, is very fine, as is the entire figure, which we had the pleasure of seeing in his studio. There is the usual table in the sculpture gallery filled with the usual *sculpturesque* toys in bronze and terra-cotta, favourite terriers and pet poodles, quite as much beneath notice as sculpture as the black and white marble dog at South Kensington, but serving to interest the public and to cause them to linger a few moments longer in a room which has otherwise but few attractions for them.

THE ASSISTANT-SURVEYOR OF WORKS.

IT was announced some short time ago that it was the intention of Her Majesty's Office of Works and Buildings to appoint an assistant-surveyor in that department, in consequence of the additional work that has been lately thrown upon the office by the changes that have been made by Government in the manner of carrying out public works. Application was at first made to the Institute of Architects to recommend a suitable person for the proposed appointment, but that body declined to do so, and it was then resolved to advertise, and to select from the candidates by public competition. The duties of the post, as explained by a circular letter from the Office of Works, are the designing and superintendence of new buildings, as well as the superintendence and responsibility for the repairs and maintenance of buildings. The candidates are required to have a knowledge of the strength of building materials, their nature, and the principles and methods of applying them to building purposes; the prices of materials, and the value of labour upon them. They should understand architectural drawing, and how to make working plans and specifications, to take out quantities, and estimate work to be done, the measurement of work executed, and abstracting and bringing it into bill. In addition to these requirements, the candidates are expected to be able to make technical reports properly composed and spelt. The Civil Service Commissioners were requested to conduct the examination of the candidates, which took place on the Tuesday, Thursday, and Friday of last week, at the office of the Commission, Cannon-row. The examination was entirely by written papers, and comprised English composition and dictation, the history of building materials, measuring and valuation, and designing and specifications. Some thirty candidates presented themselves on the first day, but these were afterwards, from various causes, reduced to twenty-one, and it is from among these the final selection will be made, it being understood that the principle adopted will be one of pure competition.

It is a matter of considerable regret that the Institute, from some feeling of pique at the treatment of one of their members by the Chief Commissioner of Works, should have refused to assist Mr. Ayrton in selecting some qualified person or persons for the appointment. Such a manifestation of animosity is below the dignity of a body that aspires to represent the architectural profession, and the satisfaction of snubbing a Government official is ill compensated by the injury that may be inflicted upon the public service, as well as upon the profession generally, should an inefficient person be chosen through the refusal of the Institute to assist the Government in making a proper selection.

It is possible that the Institute may have felt a disinclination to recommend any one individual for the office, from fear of an imputation of favouritism, but there could be no reason against its recommending the names of some half-a-dozen men, and leaving the decision in the hands of the Office of Works. This course would have prevented any suggestion of unfair preference by the Institute, and at the same time secured the services of a competent man for the post. Even if the Institute declined nominating to the appointment, it should in its own interest have undertaken the examination of the candidates. The Civil Service Commission is, from the nature of its work, a very unfit body for the purpose of examining on technical subjects, while the Institute, on the other hand, is remarkably well fitted for that purpose, and has a complete machinery already organised in the Board of Examiners for District Surveyorships, which might have been easily adapted to the circumstances of the case. There can be no room for doubt that the Government would have gladly availed itself of the services of the Institute in the matter of the examination, and it is much to be regretted that such services were not offered. The Government might have been thereby spared considerable expense and embarrassment, the dignity and interests of the profession might have been vindicated, while the Institute might have obtained a better position with regard to the Government, which might be of service in the adjustment of existing difficulties between the two bodies. An opportunity has been recklessly thrown away by the attitude assumed by the Council, and it is to be hoped that this matter will engage the attention of the members at the commencement of the session. Had Sir William Tite been president, this result would probably not have occurred.

We have no wish to disparage the conduct of the Office of Works, or of the Civil Service Commission with regard to this appointment. They have evidently acted up to their lights, and are desirous of doing what is right and honourable, but it is evident that if they had had the advice of some practical professional man they would have avoided some errors into which they have fallen. For example, the accomplishments required of the candidates are of the most utopian kind, and could not by any possibility be found united in one individual. It would be requisite for a man to be at once an architect, a draughtsman, a measuring clerk, and a quantity surveyor. Any-one who has had any experience knows how difficult it is to get an assisiant who is fully qualified in any one branch of the profession, and to attempt to combine so many branches in one person is absurd. The Institute discourages architects measuring and taking out quantities, and refuses to admit architects as Fellows who undertake this description of work, and, as a consequence, this kind of business is now almost exclusively confined to a particular class of surveyors.

The duties of designing and superintending buildings, and of taking out quantities, are, moreover, incompatible. The task of designing and superintending buildings affords scope for the exercise of the very highest genius, while quantity-taking and measuring are at the best merely mechanical processes, for which nothing more than ordinary care and practice are needful, and to set an accomplished artist to take out quantities or measure up work would be the act of a man who would "eat mutton cold, and cut blocks with a razor." We will say nothing about the curious postscript which follows the enumeration of the various duties required of the candidates, that they should be able to prepare technical reports, properly composed and spelt, as this has been already alluded to by Mr. Beresford Hope in the House of Commons, when putting a question to Mr. Ayrton. We see nothing in this than an official cautiousness arising from ignorance that an architect who has been able to master all the difficulties of his profession must of necessity have received such an education as to read and write correctly, if not with fluency.

The main defect of the examination by the Civil Service Commission is the absence of any oral test. The whole of the examination is written, and although this system may work very well for the generality of Civil Service appointments, it is obvious that in this case a *viva voce* examination should have been added. It is most important in the case of a surveyor that he should not only be a man of ability and solid attainments, but also a man of ready resource and invention. The appearance and personal habits of the man should also form an element in the choice of the examiners, and it is of course impossible to form any opinion upon these points from a written series of answers to questions.

◆

ARCHITECTURAL PUBLICATION SOCIETY.

THE annual general meeting of this society was held in the library of the Royal Institute of British Architects on the 7th inst., Mr. C. C. Nelson in the chair. Mr. Arthur Cates, after referring with regret to the death of Mr. J. Wyatt Papworth, which had occurred on the preceding evening, read the annual report, by which it appeared that since the special meeting of 19th January last, by which the proceeding with the completion of the "Dictionary of Architecture," was authorised, the attention of the Committee has been devoted to the realisation of this object. To attain this the acquisition of funds has been the first requisite. Success has attended the exertions made to procure them.

To complete the text of the dictionary it was estimated that about £2600 would suffice, and to secure this amount 160 new subscribers for complete sets at £15 15s. each were required. Of this number 95 have actually paid the whole or part of the subscriptions, 17 others have undertaken to do so, and 48 only now remain to be obtained.

The balance sheets show that all debts and liabilities which had accrued up to Lady-Day last have been fully discharged, and that there is a cash balance of £1165 14s. 8d. actually in hand and available towards the completion of the dictionary; also a further sum of £446 11s. 6d. will be gradually received by instalments, thus providing a total sum of £1612 6s. 2d. to advance the text towards completion.

To provide the further funds required, 65 copies remain available, which, when all subscribed for, will produce £1023 15s., which it is calculated will be sufficient to meet the further expenditure required. 17 gentlemen (as above mentioned) have sent their names as subscribers, but from various circumstances have not yet remitted their subscriptions; when they have all done so, the 65 available copies will be reduced to 48. It is of considerable importance that these few remaining copies should be appropriated with as little delay as possible; and the interest of every member is so involved in the thorough success of the work, which has now so far favourably progressed, that the committee with confidence anticipate that it will soon be able to report that all the past year's works are out of print.

The subscribers are very much indebted to many of their number who have with generous activity contributed to the success now reported; and the Hon. Sec. would gladly receive suggestions and assistance from many others who have stood by to await the result of the movement, and by whose help the remaining copies referred to could be readily disposed of.

During the time occupied in collecting the subscriptions, arrangements were made for proceeding with the text of the dictionary. A considerable portion of the letter M has been printed. Of the remainder, part is in type or setting up. The first sheets were laid on the table for the inspection of the meeting, and as soon as sufficient is prepared to form a part it will be issued to those entitled to receive it.

The balance sheets were also read. The Hon. Sec. stated the summary of them to be that, after closing the accounts for the 18th and 19th years to December, 1868, which completed the dictionary up to the end of letter L, paying all liabilities up to that time, and also discharging the outstanding balances for reprinting certain portions of the work, and clearing the society of all liabilities and debts, there remained a balance in hand of £285 9s. 1d. to be carried forward; then, having carried that balance forward, the subscriptions received on account of the completion of the dictionary, and taking into account the expenditure of all kinds connected therewith, together with the organisation of this scheme, advertising, and other expenses up to Lady-Day last, the balance in hand stood at £1165 14s. 8d., of which amount £1100 stood in the name of the treasurer, on deposit account, in the Union Bank of London.

◆

THE CORINTHIAN CLUB, LONDON.

A NEW club for the West End of London, under the name of "The Corinthian Club," situated opposite the Polytechnic Institution, Regent-street, has just been opened for the accommodation of its members. The premises were formerly occupied as offices by the European Insurance Company, and have undergone extensive alterations, and been entirely re-decorated by Messrs. Tridgell and Godwin, under the superintendence of Messrs. Hooper and Corpe, of Park Prospect, Westminster.

As now fitted up for club purposes, the entrance hall has been furnished with several groups of statuary, a prominent position being filled up with rockwork having running water, and a fountain, mixed with ferns and flowers. The public billiard room is a very spacious apartment, large enough to contain four or five tables. The walls have been coloured a pale apple-green, with buff coves to relieve the green, and bear a stencil ornament, of Egyptian red. This room is lighted from above by a lantern, the roof of which is of azure, with golden stars. There is also a private billiard room, in which the same style has been adopted. In the reading room the walls are of an oak colour relieved with crimson; and the friezes and mouldings, of the Corinthian order, are relieved with a coloured decoration. This room is lighted from above by a lantern of the same kind, and coloured in a similar manner to that of the billiard room. At night it is illuminated by two sun-burners. The dining room is of crimson, with gold mouldings, and niches at the four corners coloured a light green, and filled with statuary. The lantern and sun-burners are similar to those in the reading room. There are several private dining rooms in the upper part of the building, in which the principal noticeable features are the windows, filled with glass painted by hand by a new process, which leaves a washable surface, and is said to be very economical and durable. The effect produced is superior to diaphanie, or any imitation of stained glass we have yet seen. The kitchen arrangements are at the top of the building.

A peculiarity of the gas-lighting is that the whole of the burners throughout the building are lighted by an electric spark, and regulated by a small apparatus under the control of the manager. A great advantage of this method is that the long rods ordinarily used to sun-burners and lofty lights, can be dispensed with, and the whole lighting be under one control. The club is a proprietary concern, but placed under the management of a committee of gentlemen, and we are informed that it already numbers a thousand members, principally professional men.

◆

METROPOLITAN CEMETERIES.

THE question of closing the metropolitan cemeteries is one of vast importance, no only to the thousands who have friends and relatives buried in them, but to the numerous inhabitants of their vicinity. The *Gardener's Chronicle* calls attention to the fact that our suburban cemeteries are being surrounded by houses, and in a very few years will be as completely enclosed as any of our City graveyards. Whether we look to the East or the West, the same thing presents itself. Victoria-park Cemetery has long been completely enclosed, and its festering contents are still being increased, and still spreading the poisonous miasmata to the houses built against its boundary wall. Save on one side, which is occupied by a railway, the Tower Hamlets Cemetery is enclosed by houses built almost to the verge of the railings, and adds its reekings to the effluvia arising from the bone-boiling, fish-manure-making, and kindred industries of Bow-common, a moiety of which is now covered by habitations sheltering a considerable population. Brompton Cemetery is in a similar condition; Norwood and Nunhead are rapidly approaching it, and a great town is even rising up around Kensal-green. It may be true that everything is done decently and in order in these burying-places, and no doubt they are made pleasing to the eye by well-kept flower-beds and shrubberies. But, though doubtless a very proper way of treating "God's-acre," it is only an extra inducement to persons to visit the cemetery, as they might a park, and so breathe a greater quantity of the noxious exhalations than they otherwise would. We have no objection to the decoration of our cemeteries and graveyards with flowers, but we do contend that before this is done—or, rather, before the public is, in a manner, invited to visit them, proper precautions should be taken to prevent any effluvia arising from the decaying mass beneath. We shall have more to say on this subject.

◆

GOD HELP THE POOR!

DR. WHITMORE, medical officer of health for Marylebone, in his last monthly report, when speaking of the spread of scarlatina, says:—"In one particular house several deaths occurred, and although all possible means of disinfection were promptly resorted to, they failed to remove the disease altogether. Could I have treated this house as, from the intensity of the contagion, I considered necessary, I should have removed every inmate in it. I then could have employed those disinfecting agents which would have destroyed every germ of contagion, but the poor inmates had no other house to go to, nor could they find one. Hence it is—and it is lamentable to think that it cannot be otherwise—that the healthy and the infected are compelled to live together." He goes on to say, "I have recently had occasion to visit two houses in Tooting-court, which, from their extremely ruinous and dilapidated condition, I feel compelled to declare unfit for human habitation. In visiting the back yard of one of these houses, I found some bricks placed together, and evidences of a fire having recently been burning; I inquired the cause, and was told by an inmate that it was used for boiling the kettle, and for cooking, and on asking why the fire for such a purpose was not made in the house, I received this extraordinary answer—'They could not light the fire in the room, for if they did it brought the bugs out of the walls in swarms, and they were so troublesome that it was impossible to bear them.' This was gravely told me by a very decent old woman in the presence of other inmates. God help the poor creatures who have to endure such misery!"

◆

A race-stand on Carlisle racecourse gave way last week, resulting in injuries (some very serious) to nineteen persons. It is said that the stand had been strong enough, but that it had not been properly "stayed."

Civil Engineering.

CONSTRUCTION OF DOLPHINS.

MANY of our readers will probably ask, What is a dolphin, and why is it so termed? With the latter part of the question we have at present nothing to do, not being concerned with the subject of derivatives. But to the former we reply, a dolphin is a timber structure of piles braced together so as to form a protection to a pier or landing-place in a river or the sea against the blows or collision of vessels. Small specimens of this particular class of construction may be seen by all those who are in the habit of going up the river in the iron steamers that run between London-bridge and Chelsea, but it is to the larger kind that we intend to direct attention. These are to be found in the vicinity of Gravesend, and are, many of them, very excellent specimens of timber framing and trussing. A general idea of the value, and, in fact, of the necessity of dolphins at the ends of piers will be obtained from an inspection of Fig. 1, which represents the plan of a pontoon and the adjoining dolphins. Let A be the upper dolphin, that is, the one situated at the up-stream extremity of the pier, and B the lower, or that at the down-stream end. The pontoon is divided by bulkheads (shown by the dotted lines) running transversely to its longitudinal axis. If we consider a large vessel to strike the lower dolphin in the direction shown by the arrow, and the collision be of a very violent nature, the following results will ensue. The dolphin B would be smashed up, taking the brunt of the blow. It would then be driven on to the pontoon, which, in its turn, would be forced against the upper dolphin A and displace it from the perpendicular position. In a recent accident of this kind this really occurred. The bracing and strutting in the interior of the pontoon was also very much damaged and broken. However desirable it might be, it would obviously be impossible to construct a dolphin so strong as to put the pier in perfect security. There is scarcely any protection that could be devised, except, perhaps, a solid mass of masonry that could resist the collision of a large ocean-going steamer. The impetus of a ship of heavy tonnage under sail or steam is something tremendous. The momentum given to the whole floating mass is almost irresistible. It was but the other day that a comparatively small vessel, a schooner, ran foul of a lighthouse and carried it away bodily, lantern and all, and sailed into port with it lying athwart her bows, to the utter bewilderment of the whole of the spectators awaiting her arrival.

The plan of a dolphin is triangular in shape, and its construction will be understood from the following description. It consists of three, four, or five stages, according to the height of the rise and fall of the tide, and Fig. 2 represents a horizontal section taken through a line just above the first or lowest stage. This sectional plan may be regarded as constant for any height of the dolphin, though sometimes the separate stages or tiers are not quite uniform in all the dimensions and scantlings of the timbers. Evidently the first step is to drive the piles, which are all whole timbers, not less than 14″×14,″ thus giving a sectional area to each pile of 196 square inches. Taking the crushing weight of good Memel at 6000lb. per square inch, each pile would stand a crushing pressure of over 500 tons. But it is clear that there is literally no vertical pressure upon the piles composing a dolphin. It has nothing to carry except a partial flooring and one or two lamps. The strength is required not to sustain a vertical load, but to give lateral rigidity and resistance, and here it is that the value of the trussing comes into play. A few piles by themselves have little or no lateral stiffness, but when properly braced and trussed together the whole triangular structure becomes uniformly resisting, and one part can scarcely fail without the other yielding as well. Thus, if a dolphin be bodily displaced from its vertical position, and not merely a portion of it, it may be inferred that the trussing and bracing of it has been well and scientifically accomplished. For if it were not so, one part would give way without communicating the strain to another, and the whole structure would be dismembered in a piecemeal fashion. As the piles are driven down to the proper depth they are connected by the waling and blocking timbers, and the different stages or tiers completed in succession. At intervals, cheeks are bolted on to the piles to strengthen them. These are usually from 12 to 15ft. in length, and are half timbers, similar to the piles themselves, being thus 14″ × 7″. The elevation in Fig. 3 shows the manner in which the strutting and bracing is arranged. At each stage a strong strap of iron about 5″×$\frac{3}{4}$″ is passed right round the whole triangular structure, and is bolted or fastened by spikes to each of the piles, as well as to the waling pieces. There is a large quantity of iron used in the construction of dolphins, as must necessarily be the case when timbers of the dimension we have described are framed together. Bolts or straps are generally employed in effecting the requisite fastenings and fixings. There is not much choice in the matter, as they both damage and deface the timber nearly equally. When straps are used, the bolts may be of smaller diameter than where bolts alone are employed, but as there must be more of them, little or nothing is gained by the substitution.

FIG. 1

PLAN

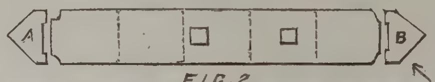


FIG. 2

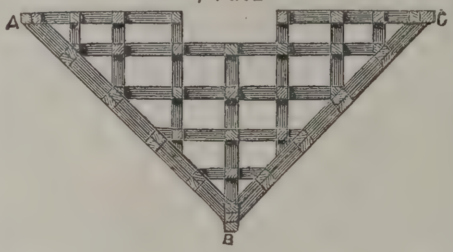
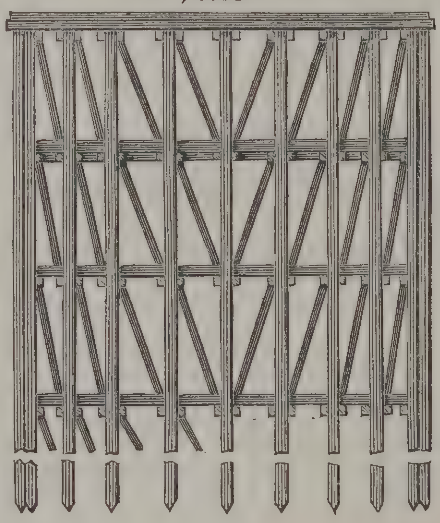


FIG. 3



It is a question whether timber might not be advantageously replaced by iron in the construction of dolphins. In situations where screw piles could be rendered available, the change would undoubtedly be for the better, in consequence of the superior holding power of the iron pile compared with that of a timber one. But in places where the ground was not well adapted for this description of pile, it is probable that the timber structure would be found, not only the more economical, but also really more efficient. It must be borne in mind that the resistance of a dolphin is composed principally of two elements. The one is the holding power of the piles, and the other the weight, or, more correctly speaking, the *vis inertiæ* of the whole triangular mass. Supposing for the moment, the former quantity to be constant, the *vis inertiæ* of a timber dolphin would very much exceed that of a similar structure of iron, which would give an equal amount of absolute strength, or even rigidity. There are still a few instances where the superior weight of the material becomes a powerful advocate for its employment, although engineering skill and science are fast reducing these instances to a minimum.

NEW WATERWORKS FOR BOLTON.

NEW waterworks for Bolton are now in course of construction at Wayoh, near the Chapeltown station of the Lancashire and Yorkshire Railway. Several members of the Corporation of Bolton recently visited the works in progress, and an account of the visit in the *Bolton Chronicle* gives us an opportunity of briefly describing some of the principal features.

The *Puddle Trench* will, it need hardly be explained, form the foundation of the embankment which is to impound the water. The basin of the reservoir, which in shape will represent the letter Y—one fork extending a little beyond the Bradshaw Brook Viaduct, on the Bolton and Blackburn Railway, the other fork extending to Know Mill Bridge—is in other respects perfectly natural. Its capacity will be 555,000,000 gallons, or equal to that of the Entwistle reservoir—for taking which the Corporation are constructing the Wayoh works—a capacity which is equivalent to 4,000,000 gallons per diem, or nearly double that of the present water supply of Bolton. Messrs. Pollitt, the contractors, have experienced great difficulties in making the embankment and the puddle trench perfectly watertight. After piercing through about 6ft. of drift, composed of sand and gravel, they came to a bed of black shale, about 13ft. in thickness, which rested upon a thin vein of coal, 8in. in depth. Below this, again, were 6ft. of very fine white rock, which yielded a large quantity of water, and here the difficulties first began, it being necessary to keep two pumping engines constantly at work. After penetrating through this rock, 13ft. of grey "rag," or bind, was met with, which was very hard and a good deal broken up. Below this was another bed of coal, 6in. thick, which was succeeded by a very hard indurated clay, called by miners "warrant earth." The general dip of this strata is from west to east, at a slight angle. At some remote period the strata has been broken up and dislocated by some violent convulsion, either the result of volcanic action or of floods. The consequence is that in this formation there are two "faults": the first, which is on the east side of trench, is very small, and has simply thrown up the strata for about 16ft.; the other, however, is 80 yards in thickness, and the evident action of fire may be discerned in it. This "fault," which has precipitated the strata down towards the west to an extent not yet ascertained, is composed of a variety of metals, at all angles and inclinations, compactly wedged and cemented together by veins of clay and other retentive materials. At one time it was thought that this might be made available for the puddle trench, but after a very careful examination, Mr. Bateman, C.E., pronounced that it would be unsafe to trust to it, and he recommended the trench to be proceeded with. Perhaps no more adequate idea can be given of the enormous nature of this undertaking than by describing the dimensions of the trench. It extends entirely across the Wayoh Valley—the open portion of it being 200 yards in length—and it varies in depth from 45ft. at the Turton to 80ft. at the Edgworth end, while it is 20ft. wide at the top and 16ft. in width at the bottom. At the Edgworth end a heading has also been driven underneath the hill for a distance of 30 yards, a height of 110ft., and a width of 12ft., in order to prevent the escape of water round the end of the puddle gutter. The making of the puddle trench has occupied nearly two years; in about fifteen months, however, from the commencement, puddle was put in a part of the trench, and from January last the men have been filling the trench along its entire length. The filling in consists, first, of a bed of concrete, 3ft. in thickness, which is laid along the bottom; then upon this, on each side of the trench, 18in. rubble stone walls are being erected, and behind these walls 18in. of concrete is being placed. The space between the walls is being filled with well-worked puddle. It is not intended to carry the side walls up the whole height of the trench. Behind the puddle in the heading on the Edgworth or easterly side, 20ft. of concrete is being placed. It is anticipated that the whole of the trench will be puddled to the line of the ground by September next, after which the westerly or Turton end will be proceeded with. Immediately the trench is completed the contractors will commence the formation of the embankment. This will measure 320 yards in length, 70ft. in height, 140 yards wide at the base, and 20ft. wide at the top. It is expected that the work will progress at the rate of about 30ft. a year. It is possible, therefore, that the reservoir may be completed by the end of 1872. The whole number of men employed upon the works at present is between 120 and 130, of whom about sixty are engaged in getting and working puddle.

The *Gauge Basins* are situated in front of the outlet tunnel. In order to understand the precise purpose for which these basins are intended, it is necessary to explain that the Wayoh reservoir is for compensation only. It is, in fact, a substitute for the Entwistle reservoir, whose waters, on the completion of the works, will be used for domestic and trade purposes in Bolton and the neighbourhood. This compensation water is of two kinds: one to be delivered at the rate of 12 cubic feet per second into the Bradshaw Brook; the other, at the rate of 4 cubic feet per second, is to be conveyed in pipes to the several bleach and dye works on the stream between the reservoir and Tootil bridge, a distance of 4½ miles. The necessity for two ranges of pipes —each 2ft. in diameter—arises from the fact that the water supplied to the mills has to be pure. Of course the water impounded in the reservoir will be all clean, inasmuch as the only works contaminating the Wayoh stream are the Know Mill Print Works, from which a goit has to be constructed to convey their dirty water into the brook below the gauge basins. To enable them to deliver this water to the mill owners, and in order that there might be no break or opening in the embankment, the Corporation have constructed a brick tunnel underneath the hill on the Edgworth side, called the outlet tunnel, which is 440 yards in length, 12ft. high, and 10ft. in width, through which the compensation pipes have been laid. For enabling the water to be regularly delivered, two sets of gauge basins have been erected at the outlet of this tunnel—and below the embankment —each containing three chambers 19ft. long, 15ft. wide, and 10ft. deep, constructed of massive masonry, with brick inverts. The first or easterly range of pipes will deliver the larger quantity of water—12 cubic feet per second—into the first of one of these series of chambers, from whence it will pass by an opening at the bottom of the cross wall into the second or measuring chamber, and from thence into the third chamber along a conduit 65 yards in length and 15ft. in width, over a weir of solid masonry into the brook, or through a sluice gate into the lodge of Messrs. Dearden, as they may require, they being the first takers. The second or westerly range of pipes will deliver the smaller quantity of water—4 cubic feet per second—into the second series of chambers, in the same way as before, with the exception that in the third chamber the water will be impounded, so as to charge the pipes through which it is to be delivered to the works on the stream. An ample storm overflow has been provided, and the whole of the works are fine examples of masonry. The outlet tunnel—through which the Bradshaw and Wayoh streams are now diverted pending the construction of the works—is entirely completed, with the exception of its southern face. One set of valves has also been placed upon the compensation pipes, but another set will be required at the southern end, and also valve columns at the north or inlet end of the tunnel, in order to enable the water to be drawn from different levels. One set of gauge basins is also finished, with the exception of the cross-wall; and the other set is three parts completed. The retaining walls enclosing the basins have likewise been erected, with the exception of the coping; while the conduit, weir, and storm overflow are all finished.

The *Entwistle Tunnel*, at present in course of construction, has its opening at the foot of the high land to the right of the embankment of the Entwistle reservoir. It will be about 3000 yards long, for two-thirds of which distance it has already been driven—1000 yards at the Entwistle end, and an equal distance at the Egerton end. Men are constantly at work in it day and night, but as the tunnel has to be driven entirely by means of blasting, the progress is necessarily slow. It is, however, expected to be completed by the time the Wayoh reservoir is ready, when the water from the Entwistle reservoir will be conveyed through it into basins at the Egerton end, and thence through pipes along the road to Dunscar, and across the fields to the Sweetloves reservoir. These pipes are already laid, and are at present used to convey the water from the tunnel to Sweetloves. The appliances for ventilating the tunnel during its construction are similar to those used in mining operations. A series of pipes is laid along the tunnel to the face of the rock where the men are at work, through which the foul air is carried by means of a furnace at the bottom of a ventilating shaft a short distance from the mouth as the fresh air rushes up the tunnel.

The works have been designed by, and are being carried out under the superintendence of, Mr. H. Baylis, C.E., the Borough Engineer, at a total cost of £170,000.

NATIONAL ENGINEERS' ASSOCIATION.

THE annual meeting of the Batley (Yorkshire) branch of this association took place on Satnrday, at the Royal Hotel in the above town, and a large number of members were present. Mr. John Redfearn presided. Mr. Wm. Winn, the secretary, read the report of the year's proceedings, and stated that the operations of the society extended over the whole of Lancashire, Yorkshire, and Cheshire. He remarked that it was truly alarming to hear of the various accidents that took place through the bursting of steam-boilers; but there was cause for thankfulness in this, that though there were 3000 in the care of 1050 members of the National Engineers' Association, only one boiler had exploded. He attributed this to the care exercised by the members, and to the knowledge they had acquired of the properties of steam and iron. The report was adopted, and afterwards Mr. Harraud, of Heckmondwike, Mr. J. Meson, Mr. F. Meson, and other gentlemen addressed the meeting.

◆

ST. SAVIOUR'S CHURCH, EASTBOURNE.

THIS church was built in 1866. It consists of a nave 36ft. × 92ft., aisles 10ft. wide, and a chancel 22ft. × 33ft. The nave ends at the east in an apse, the central arch of which opens into the chancel. The nave aisles are continued round its apse, and projections from them are formed for organ and sacristy. The chancel is groined with a brick and stone vault; the nave has a boarded ceiling, which is intended to be painted shortly. The chancel walls have lately (1870) been arcaded, and an alabaster reredos erected at considerable cost, and the steeple shown in the drawing is also just begun, Mr. Peerless, of Eastbourne (who built the church), having taken the contract for £3500. This steeple is 24ft. square at base, and 165ft. high to top of spire. The lower stage is groined; above this groining is a parish room, and over this again the bell-ringing floor. The whole will be executed in the same materials as the church—red brick with stone dressings.

The special feature in this church is the planning of the interior, which is so contrived as to make the altar and choir easily visible from all parts. The cost of the church, exclusive of the steeple, was about £7500, and it accommodates from 900 to 1000 persons. Mr. G. E. Street, A.R.A., is the architect.

◆

THE INSTITUTION OF CIVIL ENGINEERS.—In the last ten years the numbers of the several classes belonging to this institution have been more than doubled. For whereas on the 30th of November, 1860, the gross total of all classes was 930, on the 1st of July last it stood at 1894. At the former date there were 24 honorary members, 355 members, 537 associates, and 14 graduates; now there are 16 honorary members, 702 members, 999 associates, and 177 students.

Furniture & Decoration.

ON THE USE AND ABUSE OF ORNAMENT AND COLOUR IN THEIR APPLICATION TO HOUSE DECORATION.

(*Continued from page* 5.)

WHITE and gold is a favourite style for drawing rooms, and is considered to be in the purest taste—we confess we don't think so. Large rooms of unrelieved white with heavy deep gold mouldings do not appear to us to be in good taste. If the absence of colour is pure taste, then hurrah for whitewash, pure and undefiled! To us white and gold alone has a starved, poor look—very cold, and certainly not harmonious. The gold and white do not blend; the one seems independent of the other; in fact, the gold appears to be there to tell one at once, and very plainly too, that it is put there solely for the sake of its glare and glitter, and not as a part of an harmonious whole. In any decorative combination of tints, gold leaf should take its place as a colour, having its due weight in the balance, and no more. Used thus it will never be obtrusive, but help to produce richness without vulgarity, glitter without tawdriness, repose without dulness. Where pure taste is exercised, gold leaf will be used sparingly, for there is no stronger evidence of a vulgar taste than a too profuse use of gilding in decoration.' Any one may produce a gorgeous effect by a prodigal use of gold and colour, but the true test of the decorator's art is to produce a rich and harmonious effect without the aid of gold leaf. Instead of white and gold we prefer to have the doors and all other wood-work in the drawing room painted in tints; or the panels, mouldings, and quirks tinted, and the stiles white; by adopting this course we still retain its purity, but add warmth and harmony. The panels may be painted either with floral arabesques, or simple lines and ornaments, in quiet, pure tones of colour. If with flowers, they should be properly supported by springing out of some object—a vase, a husk, &c.—as a natural outflow from the general design of ornament. We object altogether to bouquets of flowers tied to nothing with ribbons, and supported by nothing. We were looking at a room in a magnificent old mansion a few days ago, done in this style. The walls were white on what had originally been panelled wainscot. On the panels were bouquets and pendants of flowers (not wreaths or festoons), exquisitely painted and surrounded by heavy gilt mouldings. The flowers had nothing to support them, and were tied up with ribbons that had nothing to hold by. The effect as a whole was very bad. Had they been real flowers they would have been held up in some way, but being painted ones we presume the artist felt sure of their sticking where he put them. Now had these beautifully-painted flowers but formed a part of some well-considered design, how different the effect would have been! It does not follow that because the work is well executed it is necessarily in good taste; this is not so. Mere manipulative skill, although indispensable in the execution of all good work, is the result of practice. Taste and judgment are much higher qualities, and very rare, and may be possessed in a high degree without the possessor having any manipulative skill whatever, but when all these qualities are combined in the same person, successful works must result.

In some of the best class of drawing rooms the woodwork is got up in polished white enamel, that is, a mixture of white lead with varnish that dries hard. Several coats of this is given to fill up the uneven parts; it is then rubbed down with lump and ground pumice stone and felt, until level and smooth; it is now varnished three or four times with varnish and flake white, and when hard cut down with felt and ground pumice stone in water, and polished by the hand. If this is got up properly, and well polished, the effect is good, but the cost is enormous, in consequence of the large amount of labour required to work it; and we have very considerable doubts as to whether it is worth the trouble and cost when it is done. The advantage in point of appearance and durability is so small over ordinary flat or dead colour that we are inclined to think that the extra cost and labour are thrown away. And it is quite certain that the colour is not so pure, as there is no varnish made which can be mixed with pure white without injuring its purity; however well and carefully it is done it will turn yellow. To obviate this in some degree, we make a practise of painting the mouldings of a white enamel door of a cream colour, flat or dead. This serves two purposes, its yellowness causes the white to look whiter, and its want of gloss makes the polished enamel to appear to have a brighter lustre. Good enamel painting is a legitimate aid to decoration, but we must utterly condemn the host of paltry imitations to which it has given rise—enamel paint, and varnished enamel. White paint is varnished, and so left without much labour being bestowed upon it, to make it level and smooth, and it is then called white enamel. Its whiteness or pureness is a myth, to begin with, and in course of a month or two it turns a dirty yellow. Such work cannot be too strongly condemned.

The imitation of woods we think to be out of place in a drawing room, except elaborately inlaid work; but in a large drawing room, in which pilasters or columns form a part of its constructive features, imitations of light-coloured marbles may be used with propriety, if well done—not otherwise. Drawing rooms are sometimes painted in the Pompeian style. But we consider this to be a mistake, and out of keeping with our climate and habits. The morning room or breakfast room should be treated in a cheerful style, warm and comfortable. The woodwork may be grained any light, clean-looking wood, or a well executed imitation of inlaid woods, all good and serviceable of its kind; above all things it is necessary to avoid a depressing dullness in such a room. When we enter it in the morning, all should look bright and cheerful, and in accordance with the good things spread out for our use. Such a room judiciously coloured gives zest and relish to our food, and soothes our tempers. With regard to the decoration of the hall and staircase, much depends upon its size, style of architecture and general character. The Greek, Italian, and Roman styles admit of marbles being used as a lining for staircases. In our Northern Gothic houses it was rarely used for that purpose, but was used as an inlay in stone, a style of an eminently decorative character. On the walls of a grand hall and staircase, we know of no style of decoration so much in accordance with its grandeur as marble, veneered with the real marble if possible, but if that is unattainable, a good imitation may be used with propriety.* Mr. Crace, in his recently published lecture on Art Training, suggests that the walls of staircases should be stencilled with a pattern in quiet colours. We cannot see the wisdom of such a course. We rather think the staircase would look too much like the rooms, which, as a rule, are covered with patterns of some kind, and consequently we want something different as a relief or change, which constitutes the great charm of contrast in treatment between one room and another. The staircase ought in all cases to be essentially different in its treatment to any other part of a house. Its decoration should be as different as its structural features are to the rest of the house. Again, Mr. Crace [says the introduction of shams—*i e.*, imitations of marbles, is always of doubtful propriety, but may do now and then, if the architecture of the staircase is well adapted for such treatment. Now we hold that it is either right or it is wrong to use imitations, and the fact of the staircase being suitable or not does not affect the question in the slightest. If it is right to use them at all, it is right to use them everywhere where real marble would be used by the architect. If it is wrong, do not use it at all. Don't let us affect to despise and condemn it, and yet use it. Do let us act consistently. A good deal of what our Transatlantic friends call "bosh" has been talked about the question of what are called shams.

There are several marbles which are well adapted for use on large surfaces, the principles of which are—Sienna, Italian pink, or Breeche, Breeche voilette, Bardiglio, white, white vein, and the granites.

In painting imitations of marbles on staircase walls, it is always advisable to make choice of a medium tint of the marble to be imitated, that is to say, there are certain blocks and slabs of (we will say) Sienna marble which are less strongly marked than others, both in vein and colour. These are better adapted for painting than the darker parts, inasmuch as they allow of a more uniform tone of colour being kept throughout. Nothing looks worse than to see one block or slab strong and dark, and the next light and faintly marked. Mr. Pitman, in a paper read before the Society of Arts, and published in The Building News, calls Sienna a billious-looking marble on account of its yellowness, and objects to its use for that reason. He has evidently formed his opinion from the study of the paper-stainer's rendering of Sienna marble, and, as far as these are concerned, he is right, but real Sienna is a most beautiful and valuable marble for the purpose, having a play of colour not found in any other marble. Yellow or yellowish drab is the prevailing colour certainly, but this is mixed and blended with such a variety of tints of pinks, greys, browns, blacks, blues, and purples, that the yellow is sobered down, and made into a perfectly harmonious whole. Another admirable marble for walls is named Italian pink. It is an adaptation of the lighter parts of the Breeche marbles, and the darker sorts of the same marble are very suitable for columns, pilasters, &c, The geological character of these marbles is very interesting. They seem at one time to have consisted of extensive layers or strata of petrified rock, which by some convulsion of nature has been broken up into all sorts of irregular pieces, such as we see when ice is broken up. The smaller pieces seem to have floated in between the larger ones, filling up the interstices, and then been again petrified. Italian pink differs both in form and colour from Sienna, the prevailing colour of the former being of a pleasant pinky hue, beautifully marked with black, blue, mauve, light red, and yellow veins, many parts having the appearance of the markings on some kinds of shells. When it is well and carefully done, on a good staircase, and in large blocks or slabs, we are inclined to prefer it before Sienna.

The Breeche violette is similar in form to the other, but is of a warm grey tone. The other marbles suitable for walls are so well known that we need not describe them here. Vestibules or entrance-halls are often done in imitation of inlaid marbles, which, when well executed, is an admirable style of decoration for this purpose. Much care and judgment is required in the selection of the marbles, and the choice of a suitable design. Designs for the inlaying of marbles should be very different to those which are used for inlaying of woods. This is necessary from the difference of material, and should always be kept in view in getting out designs for either. It will be evident to the plainest comprehension that almost any pattern, however intricate, may be cut out of thin veneers of wood with the greatest ease, when the same patterns, cut out of marbles, would entail an immensity of labour and an enormous cost; and many patterns could be cut out of wood which could not be cut out of marble. Therefore, in marble, breadth and simplicity should be aimed at, and only such designs adopted as might be used by the marble mason, which are principally geometrical patterns, formed of strap work, circles, octagons, pentagons, hexagons, &c. In petra-dura work, we have other forms, such as birds, flowers, &c., but these are the exceptions, and not the rule, therefore we do not take them into consideration here. In the setting out of the design for a vestibule wall we have found the best form to be a centre panel of either Sienna or Italian pink, or other light marble, with a strap work border of Broccatella, interlacing at the corners and centre, enclosing narrow panels of Rouge Roi, or S. Remy blue, with a stile of one of our English serpentines, of a green colour The strap or band may be two inches wide, the rouge panel four or six inches, and the strap again two inches, making altogether ten inches. The stile may be from five to eight inches wide, according to the size of the wall. The small centre panels enclosed by the interlacing band may contain either a monogram, a crest, or a shield. There are, of course, an endless variety of patterns which may be used for this purpose, always keeping in mind the caution before given as to simplicity and suitableness. Much of the prejudice against the use of imitation marbles has arisen from the use of marbled paper-hangings, the majority of them being such gross caricatures of the marbles they profess to represent; and even the best of them are so utterly inferior to really first-class painted marble, that no comparison can be instituted between them. A wall covered with paper never can have that evenness of surface and smoothness of finish that a painted wall properly prepared has. Consequently we see at once that it is paper. which fact destroys all illusions at once. If we can see at once how an effect is produced, that effect will not be near so pleasing as if the manner of its doing is effectually concealed; the greater and more complete the deception, and the more pleasure and wonder it excites, the greater the pleasure we receive from its beauty. Unfortunately this is the case with many other things in this life; once we get behind the scenes, the enchantment is dissolved. This is a low grovelling passion, according to Ruskin, and not worthy of the labour it involves. Be this as it may, it is at all events a pure pleasure we receive—an innocent enjoyment, leading to a better and higher appreciation of the beautiful and good.

Another good style of treatment is to panel vestibule walls with lines and flat ornaments, and borders stencilled in quiet neutral tints, in accordance with the style of the architecture.

The staircase may be treated in the same manner, or it may be painted dado high, with two shades of the same colour, the darkest tint about three or four feet above the skirting, and a suitable border stencilled upon the line of division; or the stencil may be divided: a black or dark-coloured border may be stencilled upon the lower, or dark colour, and a line and stops, or small repeating ornament, upon the upper or lighter tint, in any properly contrasting colour, or it may be done with the same colour as the dado is painted with. A good effect may be got by stencilling a diaper upon the dado of a darker or lighter shade of the same colour, with a border of course, but we object altogether to the upper part being treated in the same manner, thus making too busy what ought, in reality, to be a relief and contrast to the rest of the house. Nothing can be in worse taste than to cover every part of our houses with busy ornament, creating a feeling of unrest and oppression utterly opposed to the true principles of decorative art.

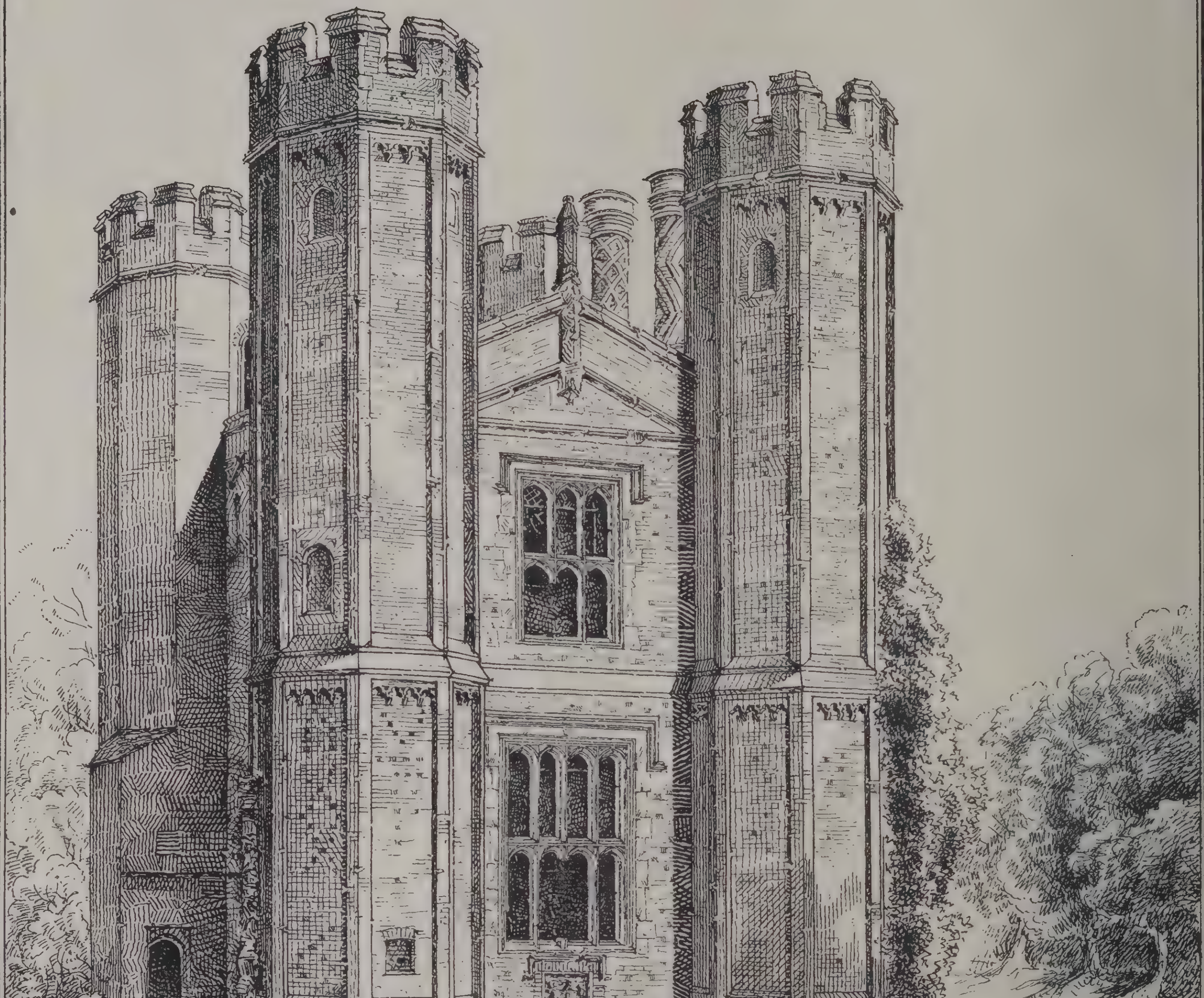
(*To be continued.*)

◆

The memorial stone of a new Wesleyan chapel was laid at Lynton, Devonshire, on Tuesday week.

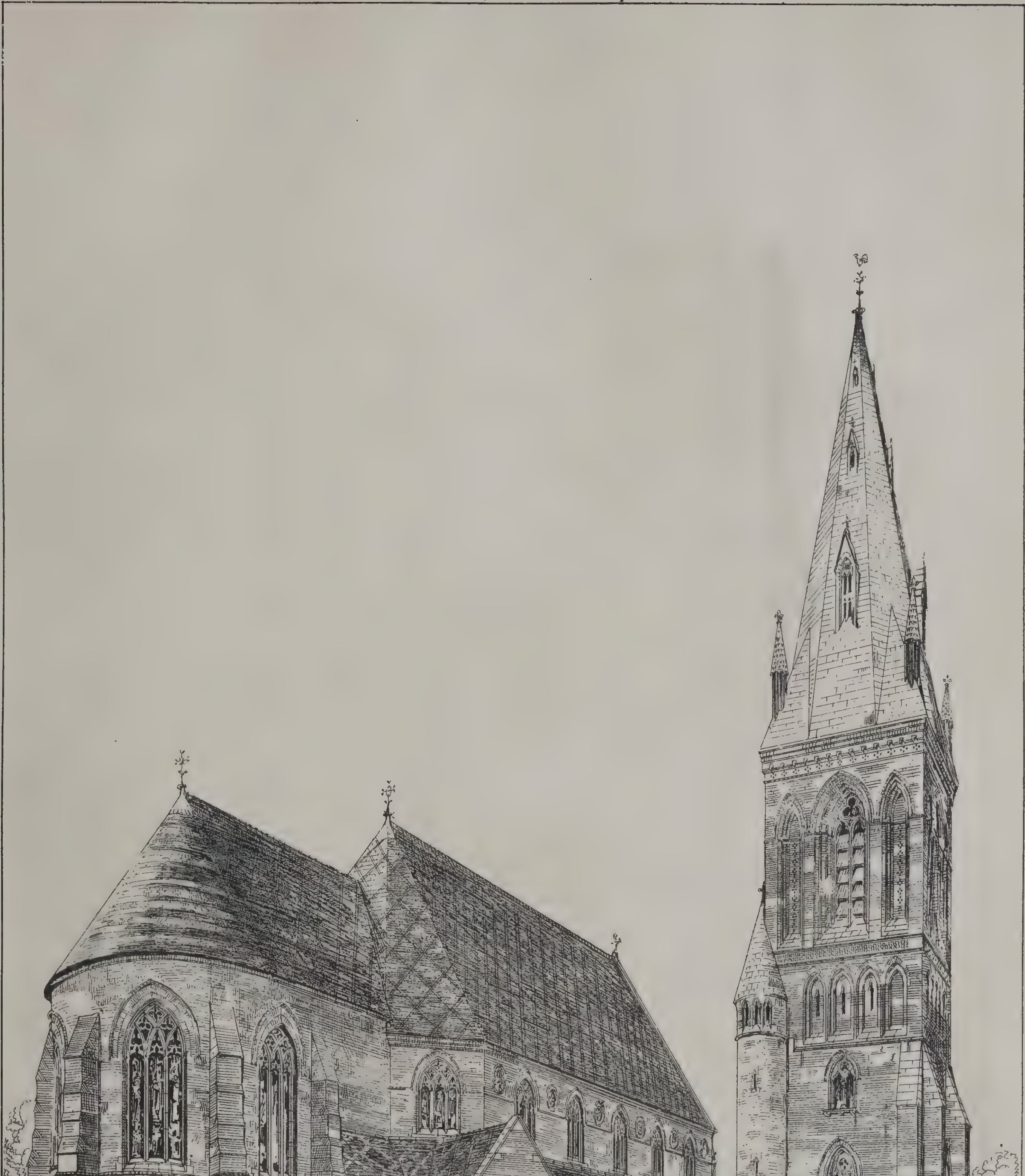
---

*Of course it will be understood that we are speaking here of strictly decorative treatment.



TOWER·GATEWAY·LEIGHS·PRIORY·ESSEX·

Photo-Lithographed by Whiteman & Bass, London



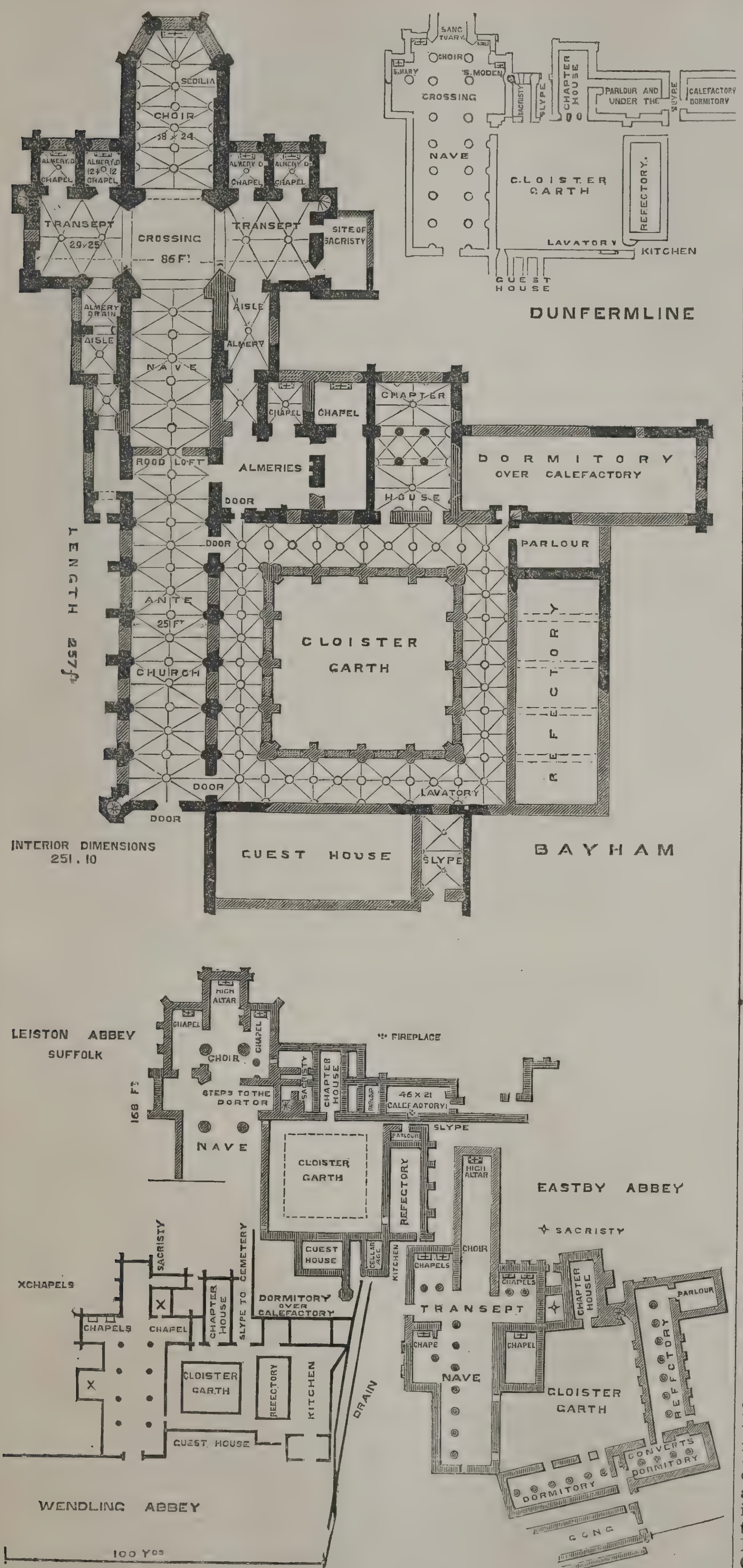
J. BELL DELT

N: E VIEW OF THE CHURCH OF S: SAVIOUR EASTBOURNE

C.E. STREET A.R.A ARCHT

SHEWING THE STEEPLE IN COURSE OF ERECTION A:D 1870

Photo-Lithographed by Whiteman & Bass, London



BAYHAM AND OTHER ABBEYS.

THE ground plans of the Præmonstratensian order were irregular, although the usual conventual arrangement was preserved. By the kindness of the Marquess Camden, Bayham Abbey, as traced by Wilkins, is now laid before the public. At first sight we are reminded of Clugny, with its vast ante-church, and of Lewes, but a careful comparison with other houses modifies the impression. A complete church, with aisles walled off from the nave (as in the choir of Rochester), an aisless eastern arm, and a transept with two chapels in each wing, is before us, with a sacristy to the south arm. Here naturally would follow the eastern range of buildings in the cloister garth, but these have been transferred, no doubt, from exigencies of the site, to the western end of the actual church, and an ingenious contrivance links them together. The wall of the south nave aisle has been removed to make room for two long chapels; then to the south are the chapter-house and dormitory over a calefactory. On the south side of the garth are a parlour and refectory, on the west a slype and guest-house. The north side presented a serious difficulty in the way of access to the nave. It was, however, overcome by erecting a long galilee, only 25ft. in width and 50ft. high, to the wall plate, along this side of the cloister, with the two ordinary processional doors. The architectural nave formed the ritual choir. There is no triforium.

The similarity between the claustral buildings of Bayham and Leiston is at first sight perceptible; and another similarity links Wendling, Eastby and Leiston together—the aisleless-choirs; and Wendling and Eastby have also in common a large adjunct or chapel (probably dedicated S. Mary) at the N.E. side of the nave. At Eastby a similar projection at the S.E. has utterly distorted the cloister garth. The refectory is in two alleys, and the dormitory ranged over a similar cellarage. The rare trigonal apse of Bayham should be noticed. Similar terminations occur in the Friar's Church, Winchelsea, the Friar's Chapel, Brecon, and in other places mentioned in my "Sacred Archæology."

Unfortunately we have no details of the internal arrangements of Bayham. About the year 1200 the site for Beaulieu, as it was called at first, was given by Sir Robert de Turnham. From an indulgence dated 1254 we know that the buildings were still in progress. In 1484 the visitor ordered important repairs to be made in the ruinous dormitory, refectory hall, and bakehouse.

The entrance gateway still remains. The base court has wholly disappeared, but we may conjecture its appearance from the fine quadrangle still in existence at Ardaines, near Caen, which exhibits a noble gatehouse on the west, a superb barn with three alleys, and buttressed two-storied farm buildings adjoining it, and upon the south side. At the east there is portion of a building forming part of the cloister garth, and the splendid west front of the nave.

The Præmonstratensian, or White Canons, stood in the same relation to the Austin Canons as the Cistercians did to other more isolated communities, stricter in discipline and devoted to agriculture and husbandry. Their jealousy of neighbours is evidenced by an agreement in the Chartulary drawn up between Bayham and Robertsbridge, to the effect that neither order should erect a place, cell, or abbey, within four leagues of the house of the other. The order was founded by Norbert of Lorraine, Bishop of Laon and Archbishop of Magdeburg, in the 12th century. It adopted the Austin Rule, and from a legend of a miraculous designation of the earliest site for an abbey (præmonstratum, foreshown) derived its name. Calixtus II. or Innocent II. confirmed the rule. They were called at first Canons Regular Exempt, and afterwards White Canons, from their dress—a white tunic, gown, and mantle, which Honorius IV. granted them, to the great disgust of the Carmelites. The abbotts never used mitre, or staff ring, or other pontifical ornament. They were forbidden to have game preserves, and they had no schools. In 1145 they established their first home in Newhouse, in Lincolnshire; in 1250 the aged bishop of the diocese actually travelled to Rome to complain of the irregularities of the order, which in 1497 became secular.

It is recorded that the Canons were so highly regarded by the peasantry that at the Dissolution, on their first expulsion, a company with painted faces and visors drove out the commissioners and replaced the white brotherhood, not long, however, to retain their ancient house. The abbey site is now beautifully kept with a loving care.

Mackenzie E. C. Walcott, B.D., F.S.A.
58, Belgrave-road, S.W.

◆

BUILDING NEWS SKETCH BOOK.-XXXV.

TOWER GATEWAY, LEIGH'S PRIORY, ESSEX.

THIS priory was founded in the reign of Henry III., but with the exception of some few pieces of rubble work, the existing buildings consist of brickwork with stone dressings, and moulded and glazed bricks used in for ornamental purposes. At the Reformation it was seized on by Sir Richard Rich, who made it, as the villagers said, "a paradise upon earth." The arms and crest of his family, with the motto, *Garde Ta Foy*, are carved over the tower doorway. Later on it fell into the hands of the Governors of Guy's Hospital, who pulled the house down, the buildings now remaining being the tower the subject of the sketch, and a large range of picturesque buildings in front of and forming a large courtyard with it. It is situate about 8 miles from Chelmsford, in a hollow, the ground rising on all sides, so that the visitor does not see its noble proportions, and the varied colours age has given to the brickwork, until close upon it. W. E. Brown.

◆

THE COMPLETION OF S. PAUL'S.

THE meeting at the Mansion House on Wednesday for the inauguration of a great effort to complete the decoration of the interior of S. Paul's, was successful. A list of subscriptions amounting to between £24,000 and £25,000 was read, and the proceedings throughout were enthusiastic. Mr. Gladstone's speech in support of the first resolution was in his best style, and his reference to Cardinal Wiseman's well-remembered rejoinder to a modern writer who criticised the heathenish emblems on the Pantheon was thoroughly to the purpose. It was, as Mr. Gladstone said, a rejoinder which made the "blood tingle and the cheek flush." "You talk," said the Cardinal, "of the emblems in the Pantheon. What are the emblems that appear in S. Paul's—for the worship of what deity was that noble temple erected? how often is it applied to the celebration of religious rites—what indication does it carry in the symbols found there of the character of the Christian Gospel? Look at the monuments with which its walls are studded—the emblems found about them are but little likely to give rise to the reproach of an exaggerated Christianity, or to the idea that they were erected to those whose names are recorded in Gospel history. It is the drum, the trumpet, and the cannon—every sign of civil and secular life—with which alone you have ornamented your cathedral, while in every respect it remains, except as to its noble fabric, perfectly dumb and incapable of expressing the purpose for which it was intended." To the complete avoidance of a state of things deserving a repetition of this taunt the efforts of the Dean and Chapter are now directed, and all Churchmen—nay every Englishman—to whom, as the resolution moved by Lord Carnarvon well puts it—"The cathedral is as much his own church, as each single church in the land is to its own parishioners," should by all means in their power endeavour to ensure their success.

◆

SUFFOLK ARCHÆOLOGICAL INSTITUTE.

THE following is an abstract of a paper on the Parish Church and the Remains of the Priory Chapel at Isleham, read by the Rev. J. Denny Gedge during the recent visit of the Suffolk Archœological Institute:—

The *Church*, which is dedicated to S. Andrew, is the work mainly of the fourteenth century. It was begun in Decorated and finished in Perpendicular times, and is for the most part transitional in character. It comprises chancel, nave, two aisles, and transepts. The east window of the chancel consists of five lights, and has much of a Decorated character; the side windows are of the same date, as is also the lean-to vestry. On the south side is an angular piscina, and a wide seat for sedilia of the same period; but the stalls and misereres are plainly Perpendicular, whilst the altar rail is of the time of Elizabeth. On the north of the chancel, under a flat arch, enriched, as was also the rood-screen recently removed, with quatrefoils and foliated work, is a fine altar tomb of Purbeck marble to Sir Thomas Peyton, Knt., who died in 1484, and his two wives. Their effigies are engraved on brass, and have elegant canopies. On the north wall of the chancel was discovered an interesting mural fresco of the Virgin and Child, which has now been covered up. The chancel arch is lofty and wide, and evinces a slightly later date than that of the east window. The nave is of five bays, and has piers and arches of the same date as the chancel arch, the piers being formed in clusters of four columns, with a boltel between them. The most remarkable feature of the edifice is the deep and rich panelling of the spandrels of the nave, which are surmounted by a well-designed cornice-string and battlement. The fine and lofty clerestory is the latest part of the church, and, with the roof, is purely Perpendicular. The space between the tie-beams and principals is filled in with tracery, and there are the usual carved angels for hammer beams. An inscription round the roof tells us that it was erected by "Crystifer Peyton, wych dyd mak thys rofe in the yere of our Lord MCCCCLXXXXV., beyng the X yere of Kynge Henry the VII." The north transept has a good sepulchral recess, well moulded and crocketed, with a figure in plate armour much mutilated. In this transept, to the south-east, is a single piscina, Decorated in style, which still bears traces of having been coloured. The south transept is Early Perpendicular in character. Here, also, is a sepulchral recess with a mutilated figure. This transept was formerly a chapel dedicated to S. Catharine. The octagonal font, with its deeply-carved panelling, is a fine specimen of Perpendicular work. The lectern is in the form of a brazen eagle, and is unusually good in its workmanship. There is a large porch to the south, of a Transitional character. The benitier, now filled up with masonry, still stands in its place. The tower is modern, replacing one which fell in 1862. It was known to have been split by lightning long before. Workmen were engaged in its repair at the time of its fall, but received timely warning of their danger.

The *Priory*, dedicated to S. Margaret, was a cell to the Abbey of S. Jacutus in Insula, in Brittany. It is evident from existing documents that it was still occupied in 1219. Probably the monks removed in 1254 to Linton. The moat of the old priory may still be traced in the meadows to the rear of the chapel.

The *Chapel* itself, now used as a barn, is of Late Norman construction. The east end is apsidal, and is supported by curious small narrow buttresses, diminishing in stages. In the interior we find a fine circular arch at the entrance to the chancel, and the piers and springing of another at the entrance to the apse. The windows of the apse take the form of very small and narrow loop-holes, deeply splayed to the interior. At the west end is one window of like character, and two circular openings higher up towards the roof. The south doorway is of the square-headed trefoil shape, while that of the north is Transitional Norman. The masonry of the walls deserves examination, since it consists chiefly of rude herring-bone work, such as we find employed during both Saxon and Norman periods, and is done in rough stone, alternating with tiles.

◆

ARCHITECTURAL AND ARCHÆOLOGICAL SOCIETIES.

Cumberland and Westmoreland Archæological Society.—A meeting of the members of this society was held on Thursday week in the Music Hall of the Athenæum, Maryport. The last meeting of the Society was held in 1868, and as the Society had been in a state of suspense for a year, and the treasurer had a balance in hand of £283, he proposed that no subscriptions should be paid for the last year.—Mr. C. J. Ferguson called attention to a portion of the Roman Wall which had been discovered near Pike Hill, between Lanercost and Birdoswald. He suggested that the society should pay for the diversion of a road near the place, in order to procure the remains.—Dr. Bruce of Newcastle said that, so far as he could judge, the place referred to was the site of a Mile Castle, and, further, it was a castle of considerable interest. There were three altars, one of which was at Lanercost and two at Rockliffe. It was desirable, therefore, to keep the site, so that it may be recognised. It had some peculiar features about it. It occurred to him that this Mile Castle had had its corners rounded off on the north side as well as the south side. The south corners are always rounded off, but not the north corners. The peculiarity to which he had referred shows that the castle had been built first, and the wall run into it. As the site was one of historical importance, it was desirable that it should be permanently retained.—A sub-committee was appointed, with power to expend a certain sum in the purchase of the site, which belongs to Lord Carlisle.—The members and their friends then left the Athenæum, and, under the guidance of Dr. Bruce, proceeded to visit the Roman camp, and the field, not far distant from it, where the recent valuable find of Roman altars was made. The party next proceeded to Netherhall, the seat of Mr. J. P. Senhouse, near to which a pavilion was erected. At the front of the pavilion the whole of the altars recently discovered were placed, and numbered in the order of the finding. After the visitors had examined these interesting and valuable relics of a bygone age, Dr. Bruce proceeded to read a paper concerning them.—On the motion of the Rev. J. Simpson, seconded by Dr. Ainger, a vote of thanks was given to Dr. Bruce for his paper, and three hearty cheers were given in his honour.

Durham Archæological and Architectural Society.—This society had a very enjoyable two days' excursion on Thursday and Friday week, to Lanercost and the Roman wall. The first place visited was Naworth Castle, of which a short account was given by Mr. Ferguson, of Carlisle. The party then proceeded to Lanercost Abbey, where a very able and exhaustive paper was read by the same gentleman. From Lanercost the members were conveyed to Gilsland Spa, passing on their way a very interesting specimen of the Roman Wall, lately discovered. Thirlwall was visited on Friday, from whence members followed the course of the Roman wall to Housesteads.

Kent Archæological Society.—The annual meeting of this society is fixed for the 3rd and 4th of August, at Sittingbourne. On the 4th there will be an excursion to the island of Sheppy, Minster Church, and Shurland Castle.

A gathering of the members of the St. Alban's Archæological and Architectural Society will take place on or about the 21st of the present month, when it is proposed to hold two meetings, and have an excursion. The *Herts Guardian* says it is a pity that the Society does not enlarge the sphere of its operations to the entire county."

The Sussex Archæological Society will hold its annual meeting at Rye on Thursday, August 11.

◆

PARLIAMENTARY NOTES.

The Ladies' Gallery.—Mr. H. Samuelson, on Thursday week, asked the First Commissioner of Works how soon increased accommodation and improved ventilation would be afforded to the Ladies Gallery, according to his own promise and to that of his predecessor in office.—Mr. Ayrton hoped the estimate for the Houses of Parliament would be laid on the table in two or three days; and as soon as the money had been voted by the House the works would proceed.

The Gas of the Metropolis.—Mr. Lefevre (in reply to Mr. T. Cave) admitted the extreme advisability of uniform gas legislation for the metropolis, but was unable to pledge the Government to bring in a Bill for that purpose.

The Thames Embankment.—On Friday last Mr. W. H. Smith asked the House to adopt an address to the Queen, praying her to direct that no public offices should be erected upon the portion of the Thames Embankment, between Whitehall-place and Charing-cross, which had been reserved to the Crown; and this demand, in which he was supported by Lord Enfield and Mr. Baillie Cochrane, he rested in the main upon the ground that the land referred to had been reclaimed at the expense of the ratepayers of the metropolis, and ought therefore to be retained for their benefit and enjoyment.—Mr. Lowe replied that the two-and-a-half acres of land referred to had been secured to the Crown as compensation for the surrender which it made of its riparian rights, in order that the Embankment might be carried out for the benefit of the metropolis; and he therefore maintained that it was completely and thoroughly the property of the Crown, as the representative of the nation, to be applied to any purpose that might seem desirable.—Mr. Hope did not deny that the Crown had a right to build upon this this piece of ground; but maintaining that it was an unsuitable situation for a War Office, suggested that it might well be occupied by the Natural History Museum, for which a site was greatly wanted. A portion of his argument was drawn from the report of the Committee upon the concentration of the public offices, and he significantly observed that "in those days enlightened and public men were the Commissioners of Public Works."—Mr. Crawford, Mr. Samuda, and Mr Bass urged that as this ground had been reclaimed at the expense of the ratepayers of the metropolis it ought to be kept free from buildings, for their benefit; while Mr. Rathbone maintained that if national property of the value of £150,000 was to be given up as for the benefit of the metropolis, the national exchequer ought to contribute at least half that amount to enable Liverpool to provide itself with recreation grounds, and this expression of opinion was loudly cheered by the representatives of many provincial towns.—The Prime Minister characterised the proposal of the member for Westminster as an attempt to revive the old bad practice of making grants for the improvement of the metropolis out of the national resources—which if renewed must be extended to other places as well as London—and, after taking several legal and constitutional objections to the form of the motion, recommended Mr. Smith to wait the proposals of the Government with reference to the disposal of this land before he asked the House to pronounce any judgment upon the subject.—Mr. Locke was energetic and humorous in his vindication of the rights of the inhabitants of the metropolis; and created much merriment by the assertion that in this country no building is ever erected which does not deface the ground upon which it is raised.—The motion was opposed by Mr. Cowper-Temple, and supported by Lord J. Manners; and Mr. Walpole made a most effective point by comparing this land to an Irish estate, the value of which had been increased by the improvements made by the tenants.—Several speeches on both sides of the question were addressed to a House which became more and more impatient and more and more noisy, until at last a division was taken, and the motion was carried by 50—156 to 106.

Ornamental Water in the Parks.—Mr. Harvey Lewis, on Monday, asked the First Commissioner of Works whether his attention had been called to the offensive state of the ornamental water in the Regent's Park, and, if so, whether he would cause immediate measures to be taken to purify it. He also asked whether he would lay upon the table of the house the copy of a letter, dated the 8th instant, addressed to him upon the offensive state of the ornamental water in the Regent's Park by Dr. Whitmore, medical officer of health for the parish of St. Marylebone. Mr. Ayrton replied that his attention had been called to the condition of the water in question. The offensive state of the water was occasioned by its being shallow and of a uniform depth. (Laughter.) The only remedy for the evil was to deepen the water, and he had given orders that it should be carried out. He had no objection whatever to lay on the table the report of the medical officer.—Sir Lawrence Palk inquired if any steps were likely to be taken to remove the mud from the Serpentine.—Mr. Ayrton said the subject was under consideration, and Government would act upon the advice of those qualified to advise them on the subject.

Sunday Labour on the Thames Embankment.—Mr. J. Talbot inquired whether the Government were aware that workmen were employed on Sunday on the Thames Embakment, near Westminster-bridge, and if so, whether they sanctioned the employment of workpeople on public works on Sunday.—Mr. Bruce said he was not aware of the fact until it was mentioned in a private communication from his hon. friend. The Government were not in any way responsible for any proceedings on that work. They had, however, communicated with the Chairman of the Metropolitan Board of Works, and he stated that the work was done on the sole authority of the contractor, and that if he had been informed of the intention he would have done his best to prevent it from being carried out.

Carriage-way through S. James's-park.—Mr. Cadogan asked the First Commissioner of Works whether, in accordance with his statement of the 6th May last, that carriages would be allowed to drive from the end of James-street through the end of S. James's-park, and out by Storey's-gate, he was prepared to sanction the opening of that thoroughfare, or whether the intention of so doing had been abandoned; and if so, upon what grounds.—Mr. Ayrton said the roadway along the Victoria Embankment would be opened on Wednesday, and when Government saw what effect that would have upon the Abingdon-street traffic they would see how they could otherwise improve the approaches to the house.

The Subway.—Mr. Ayrton, in reply to a duestion put to him by Mr. H. Edwards, said that as the Board of Works had sold all the ground on the east side of Westminster-bridge, the Government was unable to make the subway between the Embankment and Metropolitan District Railway, as had been originally proposed. Under these circumstances the Metropolitan Board, at their own expense, were constructing the curved subway, communicating with the steam packet wharf.

Building Intelligence.

CHURCHES AND CHAPELS.

Albury.—The parish church of S. Peter and S. Paul, Albury, Surrey, was re-opened on Thursday week by the Bishop of Winchester, after having undergone extensive alterations, and as, in the extension of the chancel, the altar was moved, a re-consecration was necessary. The arched head of the west door has been filled in with herring-bone brickwork, the nave has been furnished with open seats of red pine, and the vestibule panelled with the same sort of wood. The passages of nave and aisles are paved with Maw's encaustic tiles. The new pulpit has been executed by Mr. Earp, from a design by the architect, and consists of a red Mansfield base, with Caen stone superstructure, in which are alabaster panels filled with marbles of various colours. The whole is surmounted by a richly-carved moulding. The chancel, which is separated from the nave by an oak screen, is ascended by three steps, and filled with oak benches from the choir, the flooring being of encaustic tiles. The reredos is by Salviati, of Venice, and is the gift of Earl Percy. The organ is by Gray and Davison. The five windows in the chancel are the work of Mrs. Drummond, and some stained windows in the nave are by Mr. A. Gibbs, of Bedford-square. A striking corona, the work of Messrs. Hardman, has been presented by the Rev. L. O. Bigg. The church is heated with hot-water apparatus by Mr. Smith, of Bramley. The roof is covered with green and chocolate Bangor slates. The iron crosses on the transepts and of the nave are the work of Mr. Poulter, of Albury. The architect is Mr. A. W. Blomfield; Mr. Reavell was the clerk of the works: and Mr. B. Inkpen, of Abinger, the contractor.

Beaumaris.—A new English Presbyterian chapel was opened at Beaumaris on Sunday week. The chapel was designed and carried out under the superintendence of Mr. R. G. Thomas, architect, of Menai-bridge, and the style of architecture adopted is Early English. The walls are built of rubble work, lined internally with bricks, and plastered, and faced on the outside with Penmaenmawr stone, all the dressings being of Bath stone, from Messrs. Randell, Saunders, and Co.'s quarry. The cast iron work was supplied by Messrs. W. Macfarlane and Co., of Glasgow. The contractor for the whole of the works was Mr. John Pritchard, of Gaerwen. The cost of the building was under £900.

Chiddingfold.—The parish church of Chiddingfold, Surrey, was re-opened by the Bishop of Winchester on Tuesday last, after undergoing very extensive alterations and additions. The church has undergone thorough restoration; the tower has been raised 12ft.; a new north aisle has been added; and the chancel aisle has been rebuilt. The roof has been opened out, and the old oak beams stained. The roof in the new aisle is of fir. The new reredos is of light and dark alabaster, with canopies and green marble shafts. Under the central canopy is a white alabaster cross, and on each side are bands of *fleur-de-lis* tiles between strings of stone. The altar rail is of oak, arcaded, and the old piscina and aumbry are retained. The church is paved throughout with Minton's tiles. The sittings are of oak, as is also the pulpit. In the west end a new tower arch has been constructed. The tower, which has been considerably repaired as well as raised in height, was found to have been added subsequently to the erection of the nave. The east window has been filled with stained glass by Messrs. Warrington, of London. The work of restoration and enlargement has been carried out by Mr. Harris, builder, of Woking, from plans by and under the superintendence of Mr. Woodyer, architect.

Dalry, N.B.—The heritors of this parish, having some time ago resolved to build a new parish church, appointed a committeee to visit most of the new churches in and around Glrsgow. After careful examination, they recommended that their new church should be designed after the model of Eastwood Parish Church, and that the architect of that church, Mr. David Thomson, I.A., Glasgow, should be employed to build the new one. Accordingly, Mr. Thomson attended a meeting of the heritors in the Town Hall on the 1st inst., and received their instructions to prepare plans for a new church similar to that at Eastwood, and seated for 1100. The new church will be in the Gothic style of architecture, cruciform on plan, having galleries in the three arms of the cross, with open-timbered roof, and having a handsome tower and spire over the entrance. It is to be built on the site of the present church, which is to be removed.

Frome.—On Thursday week the foundation stone of a new Wesleyan chapel was laid at Beckington, near Frome. The chapel will be Gothic in style, and will be erected from a design by Mr. R. T. Williams, architect, of Frome. Messrs. Yeoman and Hodder, of Frome, are the contractors.

Heigham.—The foundation stone of the new church of S. Philip, Heigham, near Norwich, was laid on Wednesday week. The church will accommodate 800 persons, and the style adopted by the architect (Mr. E. Power, A.R.I.B.A., of Walbrook-buildings, London) is thirteenth century French Gothic. The building will be faced with flint, with Bath stone dressings, and will comprise nave, chancel, north and south aisles, and tower at the north-west end. The roof will be open-timbered, and the passages of the nave and aisles will be paved with Worcestershire tiles. Mr. J. Nelson, of Necton, is the contractor, Mr. Childs, of Norwich, the sub-contracter for the masonry, and Mr. Cooper, of London, the clerk of the works. The contract is divided into three parts—one for building the church with the tower as far as the roof, £3,262; the second for the remainder of the tower, £757; and the third for the addition of a spire, £568.

Maidenhead.—Mr. G. R. Clarke writes us that this church has cost nearer £7000 than £3500 (as stated in our number for July 1), and that it was built under three contracts, of which Mr. Griffiths was first contractor.

Roath.—On Sunday last the new parish church of Roath, South Wales, was opened for Divine service. The style is Early Geometrical. The plan is cruciform, consisting of chancel, nave, and north and south transept. The materials used are Newbridge stone in thin courses, with Bath stone dressings. The roof is of small green Bangor slates. The cost is about £6000. Mr. John Prichard, of Llandaff, is the architect, and Mr. T. Williams, of Llandaff-road, the builder.

Salisbury Diocesan Church Building Association.—At a meeting of the Committee of this association on Thursday week, grants were made as follows:—£70 towards the erection of a chancel, organ chamber, and vestry, at Christ Church, Warminster; £25 towards the restoration of the church at Iwerne Minster; £30 towards the restoration of the church at Silton, Dorset; £70 and £15 towards the restoration of the parish churches of Turnworth and Buckland Newton; and £200 towards the erection of a new district church at Portland. The plans of this latter church have been prepared by Captain Du Cane, R.E., Inspector General of Prisons, and have been approved by the diocesan architect. This church is intended to hold 300 persons, and will be built of Portland stone. It will consist of nave and transept, with a circular apse. The total cost is estimated at £2680.

Seaham Harbour.—A new (Roman) Catholic church has been opened at Seaham Harbour. It consists of an apse 10ft. deep by 21ft. wide, a nave 68ft. by 21ft., and aisles extending from the apse one-half of the length of the nave, and 15ft. wide. The architect is Mr. John Seed, of Monkwearmouth.

Sheffield.—The corner stone of a new Wesleyan Methodist chapel was laid in Rawmarsh, Sheffield, on Monday afternoon, by Mr. J. Maxfield, C.E. The new chapel is to be built on the site of the old one, and will be 62ft. long by 41ft. wide. The basement will be used as a schoolroom, and the chapel will accommodate about 600 persons. The estimated cost of the building is £1400. The architect is Mr. John Hutchinson, of Rotherham, the contractor being Mr. Thomas Walker of Doncaster.

Streatham.—On Saturday week S. Peter's Church, Streatham, was consecrated by the Lord Bishop of the diocese. The style of the church is Early Decorated, and it is built of brick, relieved with stone, and consists of chancel, chancel-aisle, portion of nave, three bays in length, with temporary wall at the west end. The chancel is lofty, being the same height as the nave, and the altar is well raised. The roof is open-timbered, and covered with tiles. The passages are laid with Minton's tiles and stone in simple patterns, the chancel being paved with rich encaustic tiling. All the fittings are of oak, those in the chancel being inlaid with walnut wood. The ceiling of the sanctuary is enriched with colour decoration, executed by Messrs. Heaton, Butler and Bayne; the lower panels are filled with representations of the Apostles, and those above them with patterns in primitive colours. The whole length of the church has been divided into panels above the arcade and the stringcourse in the chancel; it is intended to fill the whole of these with frescoes, but at present two only, those in the sanctuary, have been completed; they represent the Nativity and the Descent from the Cross. The reredos will be of freestone and mosaic, representing the Resurrection and attendant incidents. The expenditure at the present time has been about £5000, and another £2000 will be required to complete the church, exclusive of the tower. Mr. R. W. Drew, of Storey's-gate, is the architect.

The Mayor's Chapel, Bristol.—This exquisite specimen of Gothic art, in its richest and chastest form, has just undergone several important alterations. Mr. Butterfield, of London, was the architect. The chief alteration consists in the removal of the organ from the gallery over the porch to a new gallery in the transept beneath the tower. The other alterations recently carried out consist in the removal of the old chancel screens, and the erection of a new altar-piece, with raised marble steps and rails of mediæval metal work.

Buildings.

Bolton. The late Mr. Stephen Blair, formerly M.P. for Bolton, has left a sum of £20,000 to build and furnish a hospital for sick persons in Bolton, on condition that a site for the same within the area of the Bolton Union be provided within a period of three years, inasmuch as he could not legally leave money to purchase land for the site. Mr. Blair has also left £10,000 to be invested as an endowment to the charity, which is to be called the "Blair Hospital."

Cheshunt.—The foundation stone of additional buildings in connection with the Countess of Huntingdon's College at Cheshunt was laid on the 30th ult., by Lord Shaftesbury. The buildings thus commenced (and which form the first portion of work contemplated by the Committee) will consist of a rectangular block 121ft. long, 26ft. deep, and three stories high, having slightly projecting wings at each end. On the ground floor will be two lecture rooms and six students' rooms. The first and second floors will each contain ten students' rooms. At the west end of this range of building will be the tower, containing, on the ground floor, the main entrance, and, above, two students' rooms. The students rooms will average 16ft. by 11ft. The work will be executed in brick, with Bath stone strings, arches, plinths, and other enrichments. The architects are Messrs. Lander and Bedells, of John-street, Bedford-row, and Messrs. Dove Bros., of Studd-street, Islington, are the contractors. The total cost will be £8000.

Halifax.—It was decided on Friday last, at a special meeting of the governors of the Halifax infirmary, that a new building in which to carry on the operations of the charity should be erected on a fresh site, towards the cost of which Sir F. Crossley has promised £10,000. The spot selected for the new building is on the west side of the People's Park, and the expenditure on the land and the new building will be about £16,000.

Percy Main.—The new schools at Percy Main, Northumberland, were formally opened last week. The plans were designed by Messrs. Green and Gibson, Newcastle, the edifice being in accordance with the Italian style of architecture. The estimated cost was £1050.

Spennymoor.—A new covered market for Spennymoor was opened on Wednesday week. The dimensions are—total length, 160ft.; width, 37ft. 6in. There are 14 shops within the building, and there is a large open space in the centre, affording room for two rows of stalls. The market has been erected from plans by Mr. Byers, surveyor to the Local Board.

TO CORRESPONDENTS.

We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

Received.—C. F.—T. T.—J. O. C.—S. W. and Sons.—J. U.—W. J. E.—P. D. T.—M. R., Jun.—W. H. W..—B. D. and Co.—H. G.—J. H.—J. P. and Son—J N., Jun.—S. W.—C. L.—G. S. R.—A. L. and Co.—C. C. and Co.—C. N. and Co.—T. H. and Co.—M. and Co.—C. H. D.—J. R. C.—J. H.—A. R. and Co.—J. and T.—H. and Co.

Matthew Reed—With sketch of Ryton Church.
J. Langham.—With sketches of fonts.
A Constant Reader.—We cannot say.

Correspondence.

VICTORIA STONE.

(To the Editor of The Building News.)

Sir,—The letter from the Manager of the Victoria Stone Co., which appeared in your last number, though professing to reply to my former letter, is no reply at all. If the Manager will read my letter he will see that I say nothing whatever for or against the quality of the Victoria Stone—mine was a question of cost, and cost only. Speaking of the paving laid by them in the Poultry, the prophecy alleged to me is simply untrue; the paving had been laid some time before my attention was called to it. The thickness and cost of the Yorkshire flagging laid there at the same time, though by no means a picked specimen, are well known; let the Manager tell us the cost and thickness of the paving laid by him in the Poultry, and I am willing to abide the result. Moreover, regarding his challenge No. 1, I am quite willing that the paving laid in the Poultry, and the York laid at the same time, shall decide the question as to which is most durable, after they have borne the test of time and continual wear. I have no fear as to which will prove the best. I can say nothing about his challenge No. 2, as I have no knowledge how his beam is constructed; but if he will take a piece of his flagging, I will take a piece of flagging, and instead of his flag carrying double the weight mine will carry, mine shall carry twice the weight his ill carry.—I am yours, &c.,

Samuel Trickett.

2, Gresham-buildings, Basinghall-street, E.C.,
July 7, 1870.

THE PRESERVATION OF ANTIQUITIES.

Sir,—Within the week, a very interesting crypt has been destroyed in the City, which was uncovered a few months since in Aldgate, just behind and below the pump. The pump has replaced a cross. The crypt belonged to S. Michael's Church, which had been removed before Stow's time. The roadway required widening, so the arches of the crypt are now destroyed, and the cavity filled in with rubbish.

This was public property, so a committee of conservation would have been free to note it, and take steps for its preservation; but Stonehenge is private property, it belongs to the Antrobus family, who own Amesbury Park; and although I think it post-Roman in date, I cordially agree with you in desiring to see it preserved alike from accidental and from wanton destruction.

With this view, when on the spot last Autumn, I expressed a desire to see it protected by a fence, but was told that such enclosing would detract from its wild, solitary grandeur. I walked over there alone, one evening after dark, and while there saw the moon rise, just about full; no sound, no object or person visible, but these massy megaliths, which cast a long shadow on the sward, and assumed various fantastic shapes in the pale moonlight. There they stand, at the mercy of all intruders.—I am yours, &c.,

A. H. Gent.

July 8, 1870.

"THE PERPLEXITIES OF BUILDING."

Sir,—Upon the high authority of a local journal, you have thought it well to insert a paragraph in your last week's number, in which the new Islington Workhouse at Upper Holloway is held forth as a very fitting illustration of a most unhappy subject. Allow me, as the architect, to express no less my surprise than my regret at the appearance of the paragraph, the assertions therein contained doing no good to the cause they are intended to serve, and, furthermore, only misleading the public, evidencing as they do the most imperfect acquaintance with the subject. Much that is written is nonsense. Whether or no the new Islington Workhouse will prove an "unenviable handful" for the guardians, time will best show. Further comment is unnecessary.—I am, yours. &c.,

R. H. Burden,

307, Oxford-street, W., 7th July, 1870.

THE DOME OF ST. PETER'S.

Sir,—In your issue of 1st July, a paragraph is reproduced—quoted from the *Athenæum*—as to the bending of the axis of St. Peter's at Rome, running thus:—"But although thousands have gazed at that wonderful church, it was *only the other day that a French traveller* observed that the middle point of the dome and that of the portico do not coincide. The difference between them is nearly 5ft.," &c.

The "Encyclopædia of Architecture," by J. Gwilt Edition 1842, No. 142, discusses the work of Carlo Maderno, thus:—"The bungling of Carlo Maderno is much to be regretted. The arches he added to the nave are smaller in dimensions than those which had been brought up immediately adjoining the piers of the cupola; and, what is still more unpardonable, the part which he added to the nave is not in a continued line with the other work, but inclines considerably; *in other words, the church is not straight, and that to such an extent as to strike every educated eye.*"

In Chambers's "Treatise of Civil Architecture," edited by J. Gwilt, 1825, the editor takes occasion to remark, p. 325:—

"The foot which he (Carlo Maderno) added to the cross was executed in the most disgraceful manner; instead of continuing it in a direction parallel to the central line from west to east, he laid his foundations so inaccurately that the adjunct swerves 3ft. and nearly 2in. northward from the proper direction, and to coax the blunder, he made the nave wider at the eastern than at the western end. I ascertained this deviation by boring a line along the plinths on the pavement, and can therefore vouch for the accuracy of the dimension stated."

It should be borne in mind that the great entrance at St. Peter's is at the east end, and the altar at the west. Has not our French traveller led the *Athenæum* strangely astray?—"The difference must be due either to an original defect in construction, or to *subsequent inclination of the axis of the building*" (*!*) S. F. C.

PAVING STONES.

Sir,—To the letter of a York stone merchant in The Building News of last week, in which the writer tries to lessen the advantages and superiority of the patent Victoria stone over York paving in raising the difficulty of removing the pavement for water, gas, &c., pipes, he forgets to see that it is also a difficulty with the York, or, in fact, with any kind of pavement. A pavement cannot be good and last long if not properly laid and bedded, and when so laid and bedded it ought not to be removed at all; and consequently a choice and hard stone should be laid, and not, as is too often the case, a cheap and comparatively soft York stone. I have just had upwards of 3000ft. of the patent Victoria stone pavement laid in front of some houses that I am erecting, and have laid underneath the pavement 4″ glazed stoneware pipes, in which I can at any time put in or take out gas, water, &c., pipes. This will, of course, obviate the removal of the pavement. The same process should be applied to York or other paving. If this were done, York paving could then be laid and bedded in mortar, which would prevent it rotting as soon as it now does. But to be so laid York stone would have to be selected and properly worked before it would make such a good pavement as can be obtained with the patent Victoria stone—that is to say, half of the York pavement in London would have to be rejected, and the stone merchant will perhaps tell us at what per cent. the York stone would then cost above the patent Victoria stone to be of equal strength and finish.—I am, Sir, &c.

ALEX. VACHEROT, Architect.

DESTRUCTION OF WORKS OF ART BY THE POLICE.

SIR,—Either in consequence of my not having been sufficiently heard, or from the necessary curtailment of your report in last Friday's paper, the remarks I made with reference to the Evans case are not quite correctly reported. I said, "That I had not happened to have heard of the case Mr. Perry was speaking of before the evening of the 28th, at the Academy *soirée*, when some of the students were complaining of the injustice that had been done, and informed me that a petition to Mr. Bruce was being signed by Academicians and others, with a view of mitigating the penalty of £50, and the long imprisonment to which Evans had been sentenced; that I had occasionally purchased, for the purposes of study, photographs of Mr. Evans, and had never seen any description of photograph or drawing in his shop of an indecent character."

I shall feel obliged if you will kindly insert this modification of your report.—I am, Sir, &c.

R. PHENE SPIER

[Mr. Perry and the other gentlemen who took part in the discussion, as reported in our last number, page 21, are mistaken. We have made inquiries about the matter, and find that besides the works of art referred to, Evans had in his possession photographs and prints of the most reprehensible character, and that he richly deserves the condemnation passed upon him. In our opinion no class of men more thoroughly deserve severe chastisement than those who, for dirty gain, minister to the prurient appetites of the depraved.—ED .B. N.]

BUILDERS' DRAWING PLANS.

SIR,—Will you allow me, through your valuable journal, to complain against "builders' drawing plans?" I am certain that unless something is done our profession will soon become a very poor one. I know of several persons in this town acting as both architect and builder, and yet many architects allow them to come to their offices to tender for work, when at the same time they are copying the designs, and afterwards carry them out. Surely a license, the same as to auctioneers, could be granted to architects only, and so protect them against this unfair practice. For my part, if I know of builders doing so, I don't on any consideration allow them to tender for my work. Trusting that our leading members of the profession will at once take the matter up, and have something done at once, I am, Sir, &c.,

Hull, July 12th, 1870 AN OLD SUBSCRIBER.

COMPETITION DRAWINGS, SOUTH KENSINGTON.

SIR,—Will you kindly find space in your paper to state that I have not seen Mr. Westwood's work, spoken of in the BUILDING NEWS of the first of July, and therefore your conjecture is wrong as regards my designs.—I am, Sir, yours &c.,

JOHN FROST.

Coventry.

◆

Intercommunication.

◆

QUESTIONS.

[1895.]—RAISING WATER.—A gentleman's house is situated on rising ground, and its only "potable" water supply is from a well, about 150 yards distant, and 50ft. below the level of the house, and the question is, how to get it up without carrying it as at present. Some years ago an hydraulic ram was tried, but proved (as might have been expected) an utter failure, from want of sufficient water. It is now proposed to put an ordinary force pump into the well, and pump the water through the ¾" lead pipe laid in for the ram. Would any reader kindly say whether he has had any experience of such a thing, and if he thinks it will work, or suggest, if possible, a more efficient method of attaining the same object? Cost is not specially a consideration.—D. H.

[1896.]—STETTIN WHITE WOOD.—Will any of your readers kindly say what sort of timber Stettin white wood is for bearing purposes, sawn into beams, &c.; I mean the logs which come in long lengths, and about 12 to 17in. quarter girth?—F. G. H.

[1897.]—GIRDERS.—I should be greatly obliged if any of your readers would define what is a "warren" girder, and why it is so called? I see it mentioned frequently, and partly described in books, but have never seen an explanation of the term always attached to it.—JUVENIS.

[1898.]—RECLAMATION BANKS.—In some sea banks I am making up in the county of Essex, I am required to make the outer slope three to one, while the inner is only one and a half to one. Is this usual, or is it only a fancy of the engineer? Any of your correspondeats who have had experience in the matter would render me a great favour by mentioning it in your next.—CONTRACTOR.

[1899.]—BOOKS ON HARBOURS.—As I shall shortly be sent down on some large harbour works, I should like to know something of the theory of the subject. Is there any good treatise on them, and by whom, and where obtainable? A reply will oblige.—APPRENTICE.

REPLIES.

[1883.]—STRENGTH OF GIRDERS.—As no one has answered your correspondent, I may perhaps inform him that it is always considered the safest practice to make no allowance for the fixing of the ends of a beam. It is not by any means absolutely decided, even upon theoretical principles alone, what is the exact increase of strength given to a beam fixed at either, or at both ends, instead of being merely supported, and the assumption that is made of the increase depends upon the fixing being *perfectly* rigid and immovable, conditions which never are fulfilled in actual practice. I do not quite comprehend the latter question, as the addition of the iron plate to the timber must necessarily increase its strength under any conditions. Flitch beams are not, in my opinion, desirable pieces of construction. I should always prefer using a small rolled iron joist of the proper sectional area.—AN OLD HAND.

[1890.]—BEAMS, COLUMNS, GIRDERS.—You cannot have a better book than the little volame recently published by Lockwood and Co; it is "The Science of Building, an Elementary Treatise on the Principles of Construction," by E: Wyndham Tarn, M.A., London. The whole subject is treated concisely and practically.—STUDENT.

[1893.]—ARCHITECTS IN AMERICA.—I quite coincide with the draughtsman who signs himself "One too Many Here," and think there are a great many too many draughtsmen and architectural assistants in this country, and I for another would like to know if there is any method by which one could get an introduction to an assistancy in America, or any other place; or, if agreeable, would not object to join him in taking a trip across "the big herring pond," as the Yankees term it, to see for oneself.—T. T. M. H.

[1894.]—LEAD ROOFING.—Let "L. R." renew his lead with zinc next time; the latter metal will safely withstand many corroding influences which destroy the former.—T. N. S.

◆

STAINED GLASS.

CHIDDINGFOLD.—The east window of Chiddingfold Church, Surrey, has just been filled with stained glass by Messrs. Warrington, of London. The window is in three compartments, each compartment having two subjects. The central and principal subject is the Crucifixion, and below this is S. Paul shaking off the viper. On the right are Christ appearing to Mary Magdalene, and Christ walking on the Sea. On the left are the Nativity, and Christ stilling the storm. The whole are surmounted by canopies in the Decorated style of the fourteenth century. At the apex of the window are three small figures, representative of the Annunciation. One of the chief characteristics of the window in said to consist in the absence in the figures and composition of that mediæval conventionality wihch, carried beyond reasonable limits, becomes sheer caricature.

◆

WATER SUPPLY AND SANITARY MATTERS.

THE SEWAGE QUESTION.—On Saturday Sir John Thwaites and about 20 members of the Metropolitan Board of Works, with Mr. Keats, the consulting chemist of the Board, paid an official visit to the Leamington Sewage Works, for the purpose of inspecting the "A B C" system of treating town sewage. Sir John and the deputation were conducted through the sewage works by Messrs. Sillars, the resident directors of the Native Guano Company, and were accompanied by Mr. S. Urwick Jones, the chairman of the Leamington Local Board. The mode in which the "A B C" compound—animal charcoal, clay, and blood—is mixed with the sewage was explained, the effect which it has on the suspended matter in the sewage exhibited, and samples of the effluent water as it flowed into the river, after passing through subsiding canals and a large sand and charcoal filter, were shown to the deputation. Specimens of the native guano extracted from the sewage were also exhibited, and particulars were given of its fertilising effects when applied to different crops. Messrs. Sillar (in reply to a question from Sir John Thwaites), on behalf of the Native Guano Company, stated that they should be happy to allow any experienced chemist to have the supervision of the works for a fixed period, so as to thoroughly test the system on behalf of the Board. Sir John intimated that in all probability this offer to subject the system and works to an independent and rigorous test would be accepted by the Board at an early date.

CAMBRIDGE.—Three engineers—viz., Messrs. Rogers, Field, and Charles Cubitt, have been in Cambridge during the past week, and, aided by Mr. G. W. Stephenson, C.E., the town surveyor, and Mr. R. R. Rowe, the late town surveyor, have been engaged (on behalf of the Sewage Committee of the British Association) in investigations as to the sewerage of the town.

COATHAM.—The extension of the mains of the Stockton and Middlesbrough Water Works Company from Eston Junction to Coatham was completed on the 27th ult. The cost has been £5000.

UTILISATION OF SEWAGE.—The two bills for utilising the sewage of the towns of Blackburn, in Lancashire, with a population of 80,000, and of Reading, in Berkshire, of 30,000, which have been introduced by their respective Corporations, have been passed by Committees of the House of Lords. The bills empower the Corporations to purchase large tracts of land, on which to utilise the sewage by irrigation, and were keenly opposed in the Commons as well as fn the Lords. A large number of witnesses appeared against them, but the evidence in favour of the disposal of sewage in the manner proposed was deemed conclusive.

HATFIELD.—The new sewerage works at Hatfield, which have been carried out in consequence of the passing of the Lea Conservancy Act, were publicly opened on Monday week. The sewage is utilised on land at Billett Common, whither it flows by gravitation. The work has been carried out under the direction of Mr. T. W. Grindle, engineer to the Corporation of Hertford.

HULL.—The Waterworks' Committee of the Hull Corporation have been discussing the desirability of forthwith carrying out a scheme by Mr. Dale for getting an additional two million gallons of water at Springhead. It is estimated that this could be done at a moderate cost. Mr. Dale states that he has such confidence in the resources of Springhead that he believes 15,000,000 or 20,000,000 gallons could be obtained daily from the present sites, without having to obtain an Act of Parliament to carry out fresh works. Other proposals were submitted to the Committee, but no decision was come to.

SHEFFIELD MAIN DRAINAGE.—At the last meeting of the Sheffield Town Council, the Borough Surveyor reported that during the past month 274 lineal yards of the main drain had been completed, making the total length now completed 4 miles 1293 yards.

ASHFORD.—The new water company has been for some time carrying out works for the purpose of supplying the town with water. Mr. Hoad, of Worthing, engineer, has sunk two wells at Henwood, which have been tested and found to yield upwards of 240,000 gallons per day of most excellent water. Mr. Hoad is connecting these wells with the waterworks by means of a syphon apparatus.

◆

LAND AND BUILDING SOCIETIES.

THE PERPETUAL INVESTMENT AND BUILDING SOCIETY.—The nineteenth annual meeting of this society was held on Wednesday week at Radley's Hotel, New Bridge-street; Mr. R. J. Millar in the chair. The report stated that in consequence of the depressed condition of house property, the directors had deemed it wise to decline much of the loan business which had been offered to them. One thousand seven hundred and four new shares had been issued during the year. The total amount now invested with the society in shares is £264,110 1s. 11d., inclusive of interest and bonuses. A bonus of two per cent. is apportioned amongst the holders of subscription shares; £26,920 2s. 7d. has been advanced upon mortgages; and £7,720 10s. to shareholders upon the security of their shares. The balance now remaining upon mortgage is £202,268 11s. 10d, The cash statement shows that the income of the society for the year was £148,152 16s. 10d. The report was adopted by the meeting, several questions were asked and answered to the cordial satisfaction of the shareholders, the retiring directors and auditors were re-elected, and votes of thanks to the directors, auditors, secretary, officials, solicitor, &c., brought the meeting to a close.

THE KING'S CROSS INDUSTRIAL DWELLINGS' COMPANY.—This company has just been formed, Dr. Lankester, the coroner, being its chairman. The proposed capital is £46,000, in 23,000 shares of £2 each. The association is formed for the purpose of providing healthy and comfortable house accommodation for the industrial classes, at a moderate rental, in a densely-populated district, where, owing to the considerable destruction of property at Somers'-town, Agar-town, and the adjoining neighbourhood, there exists a great want of dwellings of that character. The company has secured as a site for the proposed buildings the lease (for 88 years) of the King's Cross market, in the immediate vicinity of the Midland and Great Northern Railway Termini and the Imperial Gas Works, and a contract has been entered into with the vendor (Mr. J. T. Robinson) to erect 192 dwellings, according to the plans of the company's architect. These buildings will possess the advantages of each tenement being complete in itself, including every necessary sanitary arrangement.

ROCHESTER BUILDING SOCIETY.—The annual meeting of the City of Rochester Building Society was held on Monday last, when the report presented was very satisfactory. A dividend of 6½ per cent. was declared.

◆

LEGAL.

LIABILITY TO FENCE LAND.—In the Bath County Court, recently, in the case of Paget *v.* Somerset Coal Company, his Honour (Judge Caillard) gave judgment. The plaintiff sued defendants for the value of a sheep which had wandered from the plaintiff's land, and which land had formerly been part of the same field. It was admitted by the plaintiff's counsel that there was nothing in the company's acts or deeds of conveyance to render the company liable to maintain a fence between the plaintiff's land and their quarry, but it was contended that as defendants had caused the danger by their quarrying it was their duty to fence off the land. In support of this view, Grovcott *v.* Williams, 32 *Law Journal* Reports Q. B., 237, aud other cases, were cited. His Honour held that as defendants' land was adjoining the plaintiff's, and not a mere shaft sunk in the plaintiff's land, there was no obligation to maintain the fence, and he therefore gave judgment for defendants.

◆

THE VICTORIA EMBANKMENT.—On Wednesday the Victoria Embankment was opened by the Prince of Wales and the Princess Louise, amid various manifestations of public interest in the completion of that great work. Their Royal Highnesses, at the head of a procession, entered upon the Embankment from Westminster-bridge, and having paused midway to receive an address, passed on to Blackfriars, when the Prince declared the work open. The barriers were then removed, and the public were admitted to the Embankment.

Our Office Table.

Bradford Church Literary Institute.—We have previously announced that designs for the proposed new building in North-parade, for the purposes of the Church Literary Institute, had been submitted by Messrs. Milnes and France, Mr. W. Gay, Mr. Stead Ellis, and Messrs. Andrews, Son, and Pepper, architects, all of Bradford. The designs, which are in the Gothic style, have been on view in the library of the Institute, and were generally admired. On Friday last the committee charged with the duty of selection had a meeting, which lasted over three hours. The several plans were carefully gone into and their respective merits considered, the result being that Messrs. Andrew, Son, and Pepper's design was selected for the proposed building. The firm submitted an alternative plan, showing shops on the ground floor, but the idea of having shops was abandoned, and some other modifications were suggested—for instance, the enlargement of the lecture hall, so that it will hold from 600 to 700 persons, instead of 500, as shown on the plan. The elevation fronting North-parade is handsome, and sufficiently imposing to denote a public edifice. Although the front is called Gothic, it is freely treated, and has little ecclesiastical character. The cost is estimated at £5000.

The New Law Courts and the Serpentine.—Mr. G. S. Pedler suggests in the *Times* that as the *débris* from seven acres of old houses, and the excavations to a depth of something like 20ft. for the new site in Carey-street, will give some trouble to find a place in which to shoot the rubbish, it should be carted to Hyde Park to concrete the bed of the Serpentine, thus raising the bottom, and making a good job of it, once for all, and render it a beautiful and healthy sheet of pure water for the enjoyment of every one.

New Landing Pier, Douglas, Isle of Man.—This magnificent structure, the cost of which has been nearly £50,000, having been completed to a certain extent, has been opened for the landing and embarkation of passengers. The pier, which is 1080ft. long, 50ft. wide, and has 20ft. depth of water at low water spring tides, is constructed of concrete blocks, from designs by Mr. Coode, C.E., and has been carried out under the superintendence of Mr. Powell, C.E. The result of the formation of this pier is that Douglas is no longer a tidal harbour, steamers being able to come and go at all times of the tide.

Parisian Cemeteries.—Great anxiety has been felt with respect to the condition of the Parisian cemeteries. Montmartre was declared to be in such a condition that its closing was imperatively called for, while Pere la Chaise and Mont Parnasse ought not to remain open for more than two years. Instead of yielding to the general desire which has been expressed for the establishment of a new cemetery, the municipal authorities of Paris have proposed to invest the sum of 7,500,000f. in the enlargment of the present cemeteries.

Annual Dinner.—The artisans of the firm of Messrs. Pitman and Cuthbertson (late Hayward and Pitman), decorators, 30, Newgate-street, had their 12th annual dinner on Saturday last. They left Shoreditch station about 11 o'clock for Rye House, where they enjoyed the beauty of the gardens and grounds. At 2 o'clock a capital dinner was provided in the Oak-room on the lawn by the proprietor, Mr. Teale, enlivened by excellent music. The principals of the firm were present, Mr. Pitman presiding. After dinner the sports and pastimes commenced, and afforded the greatest amusement until 7 o'clock, when the party assembled to tea. The whole arrangements were under the superintendence of Mr. Garey and Mr. Roy, the two foremen of the firm, who received the heartiest praise. In the evening all returned to town delighted with the pleasures of the day.

The Ailantus as a Timber Tree.—Both in France and America this tree is said to be gaining ground in the estimation of practical men. Experiments made in France (says the *American Agriculturist*) show the wood to have less density than that of the oak, and greater than that of the elm, while it is superior to either of the two in elasticity and tenacity. Ailantus planks have been exposed to the weather for 27 years, without shelter or paint, and the wood is still perfectly preserved. The wood is useful for agricultural implements, and it neither warps nor cracks. It saws readily, and afterwards acquires great hardness under exposure to the air. The ailantus grows so freely in America that it ought not to be a difficult matter to ascertain whether its timber is as serviceable there as it is said to be in France.

The Westminster Subway.—A letter from Mr. E. M. Barry has appeared in the *Times* with reference to Mr. Ayrton's recent statement in the House of Commons that Mr. Barry had failed to effect the necessary arrangements with the Metropolitan Board of Works and the railway for making the subway to the steamboat pier. Mr. Barry leaves it to Mr. Ayrton to reconcile his assertion with the assurances given by Ministers in the House of Commons to Mr. Cowper-Temple that his service had not been dispensed with in respect of unfinished works; but he asks to be permitted to say that there was no failure of negotiations while they were in his hands. On the contrary, before Mr. Ayrton interrupted them, he had not only agreed with Mr. Bazalgette on the subject, but had actually modified the works of the Bridge-street Subway, to enable the junction agreed on to be made. The only difficulty at that time was the reluctance of the Office of Works to allow the public the use of the subway. The Metropolitan Board insisted on this concession, and it has now been made. Mr. Barry, according to his own statement, was not instructed to negotiate with the railway company except once, when Mr. Ayrton wished him to press upon them a suggestion of his on another matter, which they declined to entertain, and which was in consequence abandoned. Mr. Barry observes that as the work would, in any case, have been carried out by the Metropolitan Board, he had no personal advantage to gain from his advice being followed, but he regrets to see a public improvement of importance marred in its execution.

Improvements at Buxton.—The plans of the walks and proposed erections for the new gardens at Buxton, to be carried out under the auspices of the Buxton Improvement Company, have been submitted to the directors by Mr. Milner, of Norwood, the landscape gardener engaged to carry out the works, and they are now on view at the Court-house.

The Case of Henry Evans.—The *Globe* is at a loss to understand the passage in the proceedings of the Architectural Association with regard to the case of Henry Evans, as reported in last week's Building News. "It is now," says our contemporary, "three months since Evans was convicted; how comes it to pass that if the case were as gross as it is described by the Architectural Association, the gentlemen who are now boiling over with indignation have not moved in the matter earlier? Mr. J. T. Perry and Mr. Spiers, at least, would seem to have known all about the matter from the first. This question requires an answer, and until those who would appear to have been accessories to the miscarriage of justice explain their silence we must hold them responsible for what has occurred, even more directly than the police."

Public Works in the Isle of Man.—The Legislature of the Isle of Man was last week engaged in considering the various public improvements that have been recently proposed. The Court voted the sum of £14,200 for the erection and fitting up of a building at Douglas for the Law Courts and House of Assembly; £28,000 for a pier at Ramsey; and £6340 for improvements at Castletown Harbour. The pier at Ramsey will be 2100ft. long; 2000ft. of this will be an iron viaduct, going out to about 13ft. at low water spring tides, and there will be a solid head 100ft long for steamers to lie against. When this pier is constructed, passengers will be able to land at Ramsey at all states of the tide.

Is Sewage Irrigation Injurious to Health.—An outbreak of scarlatina having recently occurred at Beddington Corner, in the Croydon Union, brought down upon the guardians the authorities of the Medical Department of the Privy Council. In consequence of their instructions, Dr. Cressy, the medical officer, was instructed to visit the district, and report thereupon. His opinion—formed apparently on the slightest possible grounds—was that the district suffered from its propinquity to the Croydon sewage grounds. The Local Board were communicated with, and Mr. Baldwin Latham was instructed to prepare a report on the subject, which is before us. From Mr. Latham's report it would appear that Dr. Cressy is unduly prejudiced against the sewage works, and the facts adduced by Mr. Latham bear out this view of the matter. The neglected sanitary condition of the district appears to be really responsible for the late outbreak, and prompt action should be taken by the guardians for its improvement. A hint to Dr. Cressy to be quite certain as to his facts in future, before fastening all the blame on his favourite *béte noir*, the sewage ground, would not be amiss.

Victoria Legal Friendly Society.—The annual meeting of the members of the Liverpool Victoria Legal Friendly Society, for the purpose of passing the accounts and other annual business, was held at Liverpool recently, Mr. Timothy Crowley, president, in the chair. The financial statement showed that there had been collected from the 28th May, 1869, to 27th May last, £43,852 19s. 5d., and there had been paid on 4181 insurance claims and grants during the same period, £18,804 17s. 2d.; on collectors' commission, £10,962 0s. 4d.; managers, agents, and collectors' salaries. £3258 13s. 6d.; officers, clerks', and auditors' salaries, £1034; committee and collectors' fees for transferring names of members, £537 8s. 2d½.; officers and others visiting country districts, and agency superintendents' salary and expenses, £446 4s. 10½d. The sum of £7424 5s. 0½d. had been saved during the year, and the total worth of the society on the 27th of May last was £26,945 16s. 8d.

Architectural Excursion.—Among the many steps which the Architectural Association has taken to encourage and assist the student in the preparation necessary to fit him for his profession as an architect, there has been added this year another which will afford very valuable aid to all those who are anxious to study the architecture of ancient buildings. Advantage has been taken of a very generous offer made some time ago by Edmund Sharpe, Esq., M.A., whose well-known works on English Architecture necessitates no further introduction for him, to take charge of a party of students for the purpose of studying and sketching in one of the many districts of England rich in Architectural remains. A plan has been organised for visiting Lincoln, Boston, Spalding, Sleaford, and the neighbourhood during the week commencing August 23rd. The advantages offered have found a ready response from members of the association, but it is felt that there are many connected with other societies in various parts of England by whom this opportunity would be valued; it has, therefore, been determined to invite other Architectural societies or students introduced by members of other societies to join the association on this occasion. Detailed particulars may be had on application to Mr. John S. Quilter, 9, Conduit-street, London, W., but generally the plan may be stated as follows:—On Monday, August 23rd., the members will assemble at Lincoln, and in the afternoon an address will be given in the Assembly-rooms, by Mr. Sharpe, in which he will direct attention to the principal objects to be noticed, and the best means of studying the buildings; after which a general survey will be made of the Cathedral. Tuesday will be spent in the Cathedral and other buildings in Lincoln. On Wednesday, an excursion will be made along a very interesting line of churches, lying between Lincoln and Grantham. On Thursday, another will be made to Sleaford and the neighbourhood. On Friday, after a visit to Boston, the party will proceed to Spalding, and returning visit a series of churches between the two towns. Saturday will be occupied by completing the sketches, comparing notes, and concluding the excursion. So valuable an opportunity for Architectural students, needs no recommendation, especially under so able a guide, and in order that every facility may be afforded to Architectural students, arrangements have been made to keep the expenses within the smallest limits.

Chips.

Mr. Goldie, the architect, is engaged in building a country-seat for Mr. W. G. Ward, of Northwood, at Totlands Bay, Isle of Wight.

A new bridge is to be erected over the Chilton water, at Wickhambrook, Suffolk, from a design by Mr. Salter, architect, of Sudbury. The cost will be £500.

Alfriston Church, Sussex, has lately been under repair. A new board ceiling has been placed under the bells by Mr. J. Weston, and the old solly beam has been removed and a new ornamental iron one has been placed in its stead by Mr. F. Woolgar.

THE BUILDING NEWS.

LONDON, FRIDAY, JULY 22, 1870.

THE DECORATIONS OF THE CENTRAL REFRESHMENT ROOM AT THE SOUTH KENSINGTON MUSEUM.

THE authorities of the South Kensington Museum deserve much credit for their indomitable perseverance. Tyros in art, they have resolved to attain excellence therein, and that singlehanded, as it were. They will be self-taught, and let no one take the credit of having been their teachers. The task is an arduous one, but it must be confessed undertaken under exceptionably favourable circumstances, in so far as they have John Bull's unlimited bank to draw upon. Annual grants that have amounted to sums so vast that they would stagger the practical mind of an Ayrton, were he to try and realise them in the aggregate, have subsidised this establishment. Thus failures are wiped out, and one ambitious effort after another can be experimented upon with ease. From the mental strain of endeavouring to produce the greatest effect at the least cost the Department is quite free. Doubtless it is pleasant work having thus Fortunatus to deal with, but we doubt whether it be so desirable after all. Artists seek to live in their works long after their own temporary existence, but to do so their art must be doubly refined—winnowed from all admixture of chaff—and there is nothing that so tends to restrain wilful fancy as a wholesome subjugation to the ordinary rules of life, and Necessity is not only the mother of Invention, but its best nurse and governess as well. The very first essential of high art is that every stroke and every touch should tell, and the slovenliness engendered by the feeling that an error may escape notice amid profusion is fatal to true art.

We have been led to these reflections by a careful consideration and comparison of the three new refreshment rooms at the South Kensington Museum. The largest and central one, as we are informed by the guide book, owes its decoration (as yet incomplete) chiefly to artists connected with the Department, whereas the others are indebted for theirs (also incomplete), to the firm of Messrs. Morris, Marshall and Faulkener, and to Mr. E. J. Poynter, A.R.A., respectively.

The first-named apartment has afforded a grand opportunity, and has received, evidently, the utmost thought and care, not only in its general design, but in its details, which have been executed in the Establishment or under its direction; but withal, though we hope not to be thought hypercritical, and wish to give due meed to its merits, which are great, it has the appearance rather of scholarly adaptation of recognised precedents, than of homogeneous design, and a modern art-manufacture effect in its details, rather than the loving handiwork or manipulation which is ever characteristic of the best work. It is sumptuous, but lacking in tone, by which we mean that quiet repose and harmony which alone is permanently satisfactory. Still it is bright and cheerful, and being devoted to the bar counter of the refreshment department, the frequenters of which do not stay long therein, and while there are not much given to contemplation of other than the creature comforts they have come for, we own that the apartment is practically suited to its purpose. It looks like one of the richly and gaily-adorned cafés of Paris, and its crockery walls are pleasant from their cleanliness and capacity for the retention of that quality so near to godliness.

By contrast, too, it enhances the very different character of the two adjoining apartments, and it is quite refreshing to look from its glitter and garishness into the quiet and inviting rooms on either side, where diners take their longer meal, and rest after their intellectual labours in the museum itself. To their decoration, however, we hope to return when we have finished with the one which at present occupies our attention. The room is lofty, well proportioned, and arranged in three bays in its length by semi-circular arches borne on pilasters on the entrance side, and columns coupled in the thickness of the wall on the opposite side. This arcade opens into a semi-circular bay, lighted by five windows, and this recessed space contains the bar counter. The floor, as are those generally in the museum, is of a quiet and warm-coloured pattern of tiling—red squares, with smaller black ones set diagonally at their intersections, and a border runs round the apartment of yellow, with a black fret ornament thereon. The walls, columns, and pilasters have white plinths, bases, and a chocolate-coloured dado above, which in the columns is enriched with yellow lines and white rosettes. This dado is surmounted by a band about a foot high, of white amorini upon a yellow ground, which are not, in our opinion, modelled or cast as they should be. This is but sham art, just as they are sham columns—a casing of crockery built up round a brick core. In what Mr. Ruskin would call the wall-veil, above the dado and band of pseudo-sculpture last described, are spaces left for two panels of painting of some description not yet executed; there will be one of these on either side of the doorway which occupies the centre of each end of the room and leads into one of the adjoining rooms we have mentioned. The wall itself is covered with white tiles, with hexagonal sinkings resembling a honeycomb, and borders with a dark blue ornament of a nondescript and indifferent character running round panels and pilasters. The upper part of the columns, answering to this space of the walling, is covered with a diaper pattern of white upon yellow, each diaper being upon a separate tile and stuck upon the backing or core with cement—a gimcrack contrivance to our mind, the perishability of which will, we think, soon assert itself. A frieze over each doorway is also left for some fillling in of an ornamental character, as also a square panel in a sort of monument, such as one sees put up to the memory of pet dogs, which is placed over the doorway for some purpose which has escaped us. This monumental erection breaks the frieze which crowns the wall-veil and runs round the apartment in a line with a band ornament put under the capitals of the pilasters and columns, about the same height, and of the same character as to effect as the band above the dado below. This ornamental frieze is composed of letters in white on on a yellow ground, with amorini gambolling in and among them. We tried to read it, but found some difficulty, and had to run against sundry refreshers of the outer man at the bar counter in the effort to do so, as the letters double round corners in the most provoking way. As we made it out it runs thus :—

> There is nothing better for a man than that he should eat and drink, and that he should make his soul enjoy good in his labour—X. Y. Z.

The triplet of letters forming the climax are comical, and strike one much as the twiddle-de-dee-dums with which a designer at his wits' end fills up a space which proves longer than he expected. We should certainly have recommended Q.E.D. as far more appropriate in this case, and should have advised most visitors in search of refreshment to have contented themselves by their assertion that the statement, whatever it might be, was a fact, and so save themselves the trouble we were at to decipher it.

The rest of the apartment—namely the upper part of the walls, spandrels over the arches, the windows and ceilings, are all profusely ornamented, or to be ornamented with Raffaelesque arabesques, the two former on a yellow ground, and the two latter on a white one, with some broad bands of blue introduced into the ceiling. Our readers are so well acquainted with this class of nonsense ornament that we spare them an elaborate description of the spasmodic monsters, a cross between pterodactyles and griffins, which are tied, efflorescent tail to tail, or made to alternate with jam-pots of mean capacity, though gorgeous form. The tones of colour, and the balance of ornament and space, are sufficiently well treated, and this is all we care to examine in such matters. We cannot refrain, however, from expressing our regret in parting company with this refreshment room that the prestige of Raffaelle, which has done such infinite damage to painting, that imitation of his technical skill superseded the recognition of common sense as the soul of art in his followers, should now corrupt the art-manufacture fostered at South Kensington. This spurious work of the Renaissance is, however, that which those in office there seem alone to study, although they are surrounded with specimens of the art of the best ages of the past; knowing, however, that it is hopeless at present to suggest a change, we content ourselves with this record of the fact, and on a future occasion shall contrast with the treatment of this central apartment those of its neighbours which have been designed and executed under other and better influence.

Those who would judge of this work of the South Kensington artists at its best should view and examine it by daylight, the sober light of which is most suitable to it, and the coolness of effect is pleasant in the hot summer daytime, whereas, all its defects, its glitter, and we must say clap-trap, are intensified by the glare of gas-light, and the yellow colour of its ground upon which so much depends is paled, while the blue, intended to contrast with it, and which is deep and quiet enough, is turned to black at night. This unsuitability, however, to a time when it is most visited, as, for instance, at the conversaziones often held in the museum, is a point to which proper consideration should be given.

WROUGHT IRON CRANES.

WHEN it is considered to what very violent jerks and sudden strains a crane is continually subject to, it is a matter of some surprise that cast iron should have been so much used in its construction. This can only be accounted for by the fact that a very large margin of superfluous strength is always allowed for in cranes, derricks, and all machines which have to do with the hoisting and transport of heavy materials. Timber is a good and reliable material for the construction of cranes, but unfortunately its powers of resistance are soon exhausted, and are totally inadequate to perform the onerous duties which are now demanded of it. A cast iron post and jib, and a wrought iron tie or arm, constitute the principal features of an ordinary crane. With respect to what has been already stated regarding the employment of cast iron in cranes, it should be borne in mind that the first shock or impetus of a sudden load is borne by the hoisting chain, and transmitted by it to the arm and jib. There is no doubt but that a portion of the wrench or strain affects these parts of the crane, but still the chain manifestly breaks the violence of the jerk. Similarly to its ancient predecessor, timber, the capabilities of cast iron are limited, although they surpass those of the former material. This is not so much owing to the absolute want of strength, as the crushing force of cast iron is very large, as to the somewhat treacherous nature of that substance, which is liable to fracture without evincing the slightest incipient weakness or deflection. This liability increases with the weight of the load and nature of the strain to which it is subjected, and it is therefore no wonder that engineers are cautious not to overtask a material that has frequently failed under very disastrous circumstances.

The usual form of a crane is well known, and consists of an upright post and sloping jib, and an arm which is sometimes horizontal, but more often inclined. This latter position increases the strain upon both itself and the jib, but possesses some advantages in diminishing the length of the upright pillar, and thus requiring less headway. But when cranes are required to lift twenty, and even thirty, tons, it is imperative to employ wrought iron, for two principal reasons : In the first place because a more reliable material is necessary to resist strains of so great a severity, and in the second because the peculiar form required cannot be obtained by the use of cast iron. In Fig 1 is represented an elevation of a wrought iron bent crane, and an inspection of it will at once point out the superior advantages possessed by that particular form. With the straight sloping jib it is impossible to hoist a load, especially if it be of a bulky shape, even nearly up to the top of the crane, but when it is arched, as shown in Fig 1, it may be raised close up to the under surface of the machine—in fact, as high as the shackle will permit. The utility of this arrangement in loading and unloading the cargoes of ships cannot be over-estimated. Wrought iron cranes may be constructed either on the solid or open principle. In other words, they may have the sides built up of solid plates, or made similar to those of a warren or lattice girder. The latter are rather the cheaper, as there is a saving effected in the workmanship, a great quantity of cutting and fitting in the plates being avoided. It is a very simple matter to cut the end of a small bar to any required angle, compared with cutting the edge of a large plate to a curved shape. Confining ourselves for the present to the solid-sided or plate crane, the section of one intended for moderate duty is represented in Fig 2. We shall, in another article, refer to the subject of the strains upon these structures, which require very accurate and careful calculation. The section is composed of one or more flange plates, which vary in scantling with the strains upon them, and as a rule increase from the summit to the end, where obviously the leverage tending to break the crane across is a maximum. The web or side consists of a series of plates rivetted together at the joints by wrappers of tee iron, which thus fulfil the double purpose of acting as covering plates for the joints and as stiffeners for the side or web of the crane. This is one of the disadvantages attending all iron constructions which are based upon the plate or solid-sided system. Whatever may be the strength of the web, so far as its sectional area of metal is concerned, it must be supplemented by stiffening pieces of some other form. In every description of girder the joints invariably constitute the weak points. In the plate form the joints in the web are very numerous, while in the open or lattice principle there are virtually no joints at all in the web, the bars of which, by virtue of their shape, carry their own stiffening within themselves. A glance at Fig. 2 will at once indicate that a large amount of extra rivetting is incurred in the solid side. This punching or drilling, as the case may be, of so many holes in close proximity to one another, must tend to produce a local weakness in the plates, in spite of the best manner in which the rivetting may be performed.

FIG. 1

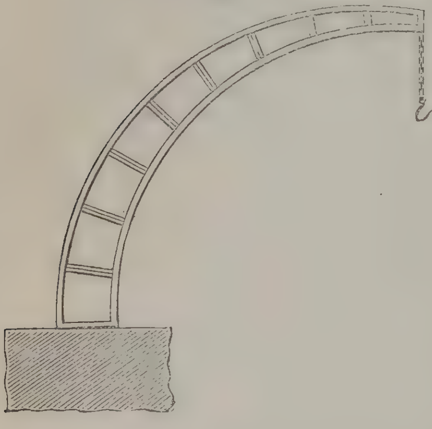


FIG. 2

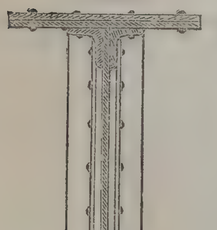
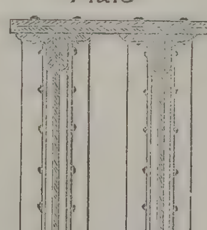


FIG. 3



The section represented in Fig. 2, would answer only for cranes designed to lift a moderate weight. When the maximum load to be hoisted reaches to twenty tons and upwards, the section alluded to would be too weak for the purpose. It would not fail for want of absolute strength, but from want of the requisite rigidity. This is the fault of all single web plate girders, and the same remark applies to lattice girders, in which but a single row of diagonal bars is employed, either in the plane of the elevation of the girder or in that of its transverse section. Whenever the load exceeds about twelve tons, the crane should be made tubular, with a box-shaped section, represented in Fig. 3. The additional stiffness imparted by thus doubling the sides is at once apparent from a mere inspection of the drawing. There is an objection to this tubular form of crane which applies to all box girders of small dimensions. It is the difficulty, in many instances the absolute impossibility, of examining the interior after the separate parts have been put together. It may in some cases be just possible to give the inside a fresh coating of paint, but anything like a proper examination is out of the question. Rust and corrosion have full license to develop themselves unknown and unchecked. This objection is even urged with some degree of truth against tubular girders similar to those spanning the Straits of Menai, for although there is no difficulty in getting at the various interior parts of the bridge, yet the task of examination can never be so thoroughly and satisfactorily accomplished as in examples which are open to the light. We must reserve for another article the description and investigation of the manner in which cranes are affected by the strains they undergo, and the method of calculating them.

◆

HOW TO WRITE A SPECIFICATION.

It is, we think, Mr. Wightwick, the author "The Palace of Architecture," who, speaking of the anxieties of architectural practice, adverts especially to those attending the composition of a specification ; and ventures on the quaint assertion, "the architect's wife always knows when it is *specification day*":—

Hyperbole soars too high, or creeps too low ;
Exceeds the truth, things wonderful to show,

says an old treatise on rhetoric ; and doubtless there is a little hyperbole in this assertion of Mr. Wightwick's. If, however, he merely meant by it to show what a mental worry to the architect is the drawing up of a specification, it is hard to say how he could have more pithily expressed a well-known truth. The composing of a specification is unquestionably a disagreeable and anxious task at all times. It is not like the drawing up of a lease or a marriage settlement, a matter of very much routine and very little imagination ; but is really the concocting of a paper that shall possess to the full all the routine lore of the legal document, and a considerable amount of thought and special invention or imagination to boot. If every church or chapel, every warehouse or shop, and every mansion or cottage were alike, the labour of the architect in drawing up a specification would approach somewhat to that of the lawyer, and architects might hope to lay down for themselves some accepted form, or head and tail of a form, that would for all time serve all possible cases, if it were but to take the well-known exordium of, "This Indenture made and entered into this— year of our Lord—witnesseth,"&c., &c., and terminate with the good old peroration, "anything to the contrary hereof in anywise notwithstanding."

But, alas for the poor architect, it is not for him to exclaim, with the Virgilian Shepherd,

"*Deus nobis hæc otia fecit.*"

for neither gods, clients, nor contractors give him any such "ease," or, as the lawyers have it, "easement." No two of his buildings are alike, or sufficiently alike to warrant him in making the specification of any one of them do service for any other. There is nothing for it but to sit down and compose a special document for each individual case. We know very many architects of great skill and extensive professional experience who look with loathing on the task of writing out a specification ; and ludicrous tales might be told of attempts made to get over the difficulty, or rather the irksomeness, of the task, by setting some junior clerk to hash up or collate from one or more old specifications, by way of getting a lift to the solution of the hateful problem. Let us not disedify the young reader of this article by an exposure of any of these many "dodges," especially as we may safely predicate of them that they are all more or less futile, and that, by the time the task has come to an end, the composer invariably finds he would have done far better to have first looked his difficulty in the face, and have sat down to a bran new specification.

To architects (London ones *par excellence*) who do not take out and issue their own quantities, the drawing up of an original specification is an absolutely painful task, and one, moreover, that can only be accomplished with any approach to perfection by the previous getting out of a most complete set of drawings—such a set, indeed, as very few architects in large practice can hope to find time to prepare ; and even when they have done all this, the surveyor who is called in to take out the quantities for the builders will be almost certain to discover many matters inadequately or improperly specified, if not altogether omitted. Such architects do well to keep by them their old specifications, such at least as have been carefully prepared, and for edifices resembling, as nearly as may be, the work to be specified. We say advisedly *their* old specifications. If a man aspire to method and accuracy in composing his specifications, he can always with confidence collate from his own documents ; but with very little confidence or satisfaction can he copy the specifications of another. The chances are that his own old specification will have on its fly-leaf or margins some pencil notes of items omitted or ill-described ; and these he will find of great service in the composition of a new document.

Architects vary very much in the respective modes of composing these documents. Very many of them take an absolute pride in the length of their specifications. They stint the number of their drawings, and trust to the prolixity of their specifications to make up for their shortcomings in delineation. It is a signal mistake. The form, the size, the number, the position of any separate portion of an edifice can be far better and more clearly expressed by delineation than by writing ; and, where time admits, these matters should be described by drawing. When this can be done the shorter a specification can be the better it will be. Its province should be to specially define when or in what order, with what materials or ingredients, and in what style, quality. or manner the works are to be executed, leaving the drawings to explain their form, size or dimension, their number and position in the building; and, indeed, if architects would but observe this rule, we see no reason why some enterprising publisher of office forms might not with great advantage to the profession issue a set of printed skeleton sheets, whereon architects might draught out their specifications—such sheets to set forth the preamble, the general conditions and the trades in usual sequence; each trade sheet containing, pretty widely apart, marginal titles of the usual items of a building, for the architect to expunge or to fill up as he found necessary. On such printed sheets we would have printed in full for use all those stock clauses that every architect embodies as a matter of course in his specifications—clauses that, like the laws of the Medes and Persians, "alter not," such as the growth and seasoning and freedom from sap of the timbers, the thickness of mortar joints, the pargetting of flues, the goodness of stone and the placing it on its natural bed, &c., &c. These are matters that cannot be expressed by delineation, and which make up clauses that not only pertain solely to specifications but are of invariable use—stereotypical clauses in fact, that may very fairly be stereotyped for all time; and the mind of the architect may be set free from the bother of seeing to their due insertion in the right place.

We need hardly say that the most perfect specifications are, or ought to be, those which are written out by the person who computes the quantities, even though he be not the actual architect of the intended building, but an independent building surveyor. In either case, the usual process is to take out the quantities from the drawings with the aid of a rough general specification, this latter document being subsequently amplified and perfected by collation from the surveyor's dimension-book. In the process is very often involved a thorough over-hauling of the drawings themselves, which, however conscientiously prepared, will seldom be found to stand the test of a bill of quantities.

Specifications of alterations and repairs of buildings should always be drawn up on the buildings themselves, the latter being begun from the roof outside, thence continued to its inside, after that downward from topmost room to basement, ending with the stairs and passages, taken in like order. The greatest mistakes may be made by attempting to compose such specifications in the office, away from the structure to be altered or repaired

For the avoidance of errors and omissions in these tiresome documents young architects will do well to determine for themselves a handy rotation of trades and their respective items or operations; and, having done so, to adhere to it, and gradually acquire the habit of compiling future ones from their own documents alone. Their headings may be as copious and as oft-articulated or dissected as they please to make them, for all this tends to perspicuity, and perspicuity will ward off litigation, the very service a client requires in his architect. As to the paragraphs or clauses themselves, the shorter they are, and the more they can be exchanged for drawings, the better; indeed, we cannot better close these observations than by quoting the pithy remark of an eminent contractor, who, being asked to define in what a specification consisted, declared it to be simply "Drawings, drawings, lots o' drawings."

◆

Messrs. Osborne, Bros., the contractors, are making rapid progress with the erection of S. Paul's Church, on the Dane Hills, Leicester. The walls will soon be ready to receive the timbers for the roof. The church is being built with the granite of the county, relieved by dressed stone, red and black bricks being sparingly introduced.

THE RAPHAEL AND MICHEL ANGELO EXHIBITION AT THE BURLINGTON FINE ARTS' CLUB.

On June 17th, No. 806, we called attention to this Exhibition. It is, however, so interesting and important that we are justified in offering some additional remarks on it.

The idea of a Raphael Exhibition, for which, says the *Daily News*, we have in this country such special advantages in the Oxford University drawings, those of the Royal Collection, and the Cartoons, was a favourite scheme of the late Prince Consort; and under his direction a very extensive collection and catalogue had been prepared, which was placed in the reading-room of the Club by the permission of the Queen, with a selection from the drawings by Michel Angelo and Raphael. Fortunately for those who had not the privilege of seing these precious works on the one day they could be allowed to remain, the Queen, with her usual consideration, has ordered photographs of them to take the place of the originals, and they are now to be seen with the other drawings, which belong chiefly to Mr. John Malcolm and Mr. Henry Vaughan. Of those drawings from the Windsor Cabinet it would be impossible to express the singular interest; one feels a sort of awe in the presence of works which ever seem to be still fresh from the hand of the immortal artists. Such is the living freedom of line, the touch of vivid feeling, the sweep of power over the whole, that we seem to come nearer to these great limners than in looking at their more laboured and fully developed works. Here is the small study for the cartoon of the "Miraculous Draught," and that for the "Charge to Peter," in which Raphael has simply drawn his models in the ordinary slight dress they wore, intending afterwards to transform them into Christ and the Apostles by his own hand. In the Royal collection, also, another of the cartoon studies is preserved, that of the "Elymas." We may add that the sketch for the "Stoning of Stephen" is in the collection of the Archduke Albert of Vienna, and that for the "Paul preaching at Athens" is in the Uffizj at Florence. These, with the old engraving by the Master of the Die of "The Coronation of the Virgin," of which a copy (128) is exhibited amongst Mr. R. Fisher's fine collection of engravings, are the only records of the four lost cartoons, amongst which is "The Conversion of S. Paul," formerly known to have been in the possession of Cardinal Grimani. The immense superiority of these drawings over the large finished works, which, in fact, were generally executed by pupils, who enlarged them by squares from the master's work, is well shown in the exquisitely beautiful drawing in black chalk of "Cupid and the Graces," for one of the frescoes on the ceiling of the Farnesina, and very little of which was painted by Raphael at the time, and all that his pupils did has since been painted over by modern "restorers," so that the interest in these drawings is often far beyond that of the pictures. In the Queen's collection, also, is the unfinished drawing in red chalk by Raphael of the "Massacre of the Innocents," engraved by Marc Antonio, but of which the large work is lost except it be that fragment of a cartoon in colour in the National Gallery. The sketches for the entombment picture in the Borghese Palace, Rome, in pen and ink, show at the same time the wonderful gift of hand of Raphael and his extraordinary study of the figure. In one of the five for this picture in the exhibition, he has drawn the skeleton figure for the fainting virgin, to make himself quite sure of his drawing in this most dfficult group. Mr. Malcolm is fortunate in possessing another study for this group which we now see placed side by side with the one just mentioned. Many other sketches exist showing how Raphael studied the anatomy of the figure, and we have in the present exhibition a facsimile of the drawing by Michel Angelo in the Oxford collection representing himself and his friend, Andrea del Torre, dissecting a body. There are eighteen photographs of drawings by Raphael lent by the Queen from the Royal collection, and fourteen by Michel Angelo. Of these the most remarkable for that amazing power of drawing the figure in strong action which distinguished Michel Angelo above all compeers, was "The Archers"—a party of half nude figures running as they let fly their arrows at a mark—and "The Labours of Hercules," represented in three groups on one small sheet of paper. The "Prometheus" and "The Phaeton" are almost equally striking. The former are in red chalk and the latter in black. The "Bacchanals" is also a superb example, and the drawing in black chalk of a "Holy Family" is wonderfully graceful as a composition and very grand in conception, less conventional and more imposing than the one picture he painted of the subject which is one of the great treasures in the tribune of the Uffizj. There are several studies for figures in the great masterpiece of Michel Angelo—the ceiling of the Sistine Chapel, and the "Last Judgment," which occupies the whole of the end wall. Mr. Malcolm contributes a grand heroic head of St. Bartholomew, which was once in the Lawrence collection, and a study for the figure of Haman, which fills one of the angles of the ceiling, with others. Mr. Vaughan lends a most interesting sketch in pen and bistre for the "Isaiah," and Mr. F. Locker a beautiful study in red chalk for the "Adam"—one of the grandest figures ever conceived by the great man—which was formerly in the famous Lawrence collection. Mr. Vaughan's study for a figure in the celebrated cartoon of Pisa, as it is called, representing one of the battling soldiers, suddenly turning round at the alarm, is a precious relic of the lost work, the extraordinary beauty of which may be imagined from the fine engraving of Antonio Veneziano, known as "Les Grimpeurs" (dated 1524), and another, the work of Schiavonetti, which may be studied in the most important collection of old engravings lent by Mr. R. Fisher. These, indeed, are the only records left of designs by Raphael and Michel Angelo, which are lost; they are by Marco de Ravenna, Bonasone, Nicholas Beatrizet, Eneas Vico, Ghisi, and Caraglio. Eneas Vico, it will be remembered, engraved on a large scale the "Last Judgment," as Bonasone did smaller, and good specimens of both these are in the Exhibition. These are of great interest, because the fresco itself has long been too much injured and covered with incense smoke to be properly seen. But science has recently rendered the most invaluable aid to art in the magnificent photographs which have been taken of the whole of the ceiling of the Sistine Chapel, as well as the immense picture of the "Last Judgment." We perceive this has been accomplished by the employment of the magnesium light, and by taking sections of the picture at a time, which are then joined together. The full beauty of the work has certainly never been so well displayed in our time, and though we see the great cracks running in every direction across the picture, yet the majestic power of the design comes out over all these small blemishes of time. Some of the single figures completely realise the "mannera terribile" of Michel Angelo, and show how in his modern style he rivalled the beauties and grandeur of Greek art. The great frescoes of Raphael in the Stanze of the Vatican have been taken by the same process under the skilful manipulation of Mr. Adolphe Braun, and a fine series of these, contributed by Mr. Leighton, R.A., fills one side of the reading room of the club, while those of Michel Angelo face them on the opposite side. Amongst those from the works of Raphael should be noticed especially that from the famous "Heliodorus," and that from the full-sized cartoon for the fresco of "the school of Athens," which is preserved in the Ambrosian library at Milan. From these grand works, which represent the highest achievements of painting, it is deeply interesting to turn to those of such unaffected simplicity and sweet beauty as the silver-point drawings of Raphael in his youth, perhaps studied from his beautiful sister, which belong to Mr. Malcolm's collection, or the ideal heads by Michel Angelo—"A Warrior," and that known as "the Marchioness of Pescara," which came from the Buonarotti family, also from Mr. Malcolm's collections, or the beautiful "Cleopatra" (101) belonging to Mr. Vaugham.

The exhibition is to remain open to the end of the season.

◆

CARNARVON CASTLE.—Mr. Llewellyn Turner, the Deputy-Constable of Carnarvon Castle, denies the statement that the London and North-Western Railway have tunnelled beneath that great national monument, between which and the railway there is a whole row of houses, erected nearly 50 years ago. The castle authorities, he adds, have removed some thousands of tons of rubbish from the interior, and cleared the moat of the rubbish with which the Vandals of 50 or 60 years ago filled it up. These excavations are constantly bringing to light the hidden beauties of that singularly elegant structure, which the late Mr. Hartshorne, declared was the most splendid specimen of its kind in Great Britain—the second in Europe

A STEEP RAILWAY.

A RAILWAY has been constructed in Pittsburg, Pa., to carry passengers to and from the top of what is known as Coal Hill, which overlooks the city and the country around to a great distance. The plane is located 250ft. west of the Monongahela suspension bridge. The roadway, starting from Carson-street, crosses the Pan Handle railroad, and reaches the face of the hill (which at this point is 90ft. above the level of the Pan Handle railroad track) by means of an iron bridge 160ft. long. This bridge is supported by 10in. columns, made of wrought-iron ¼in. thick. The vertical height of the hill at this point is 330ft., giving the plane a length of 650ft., and an inclination of 35 degrees. The roadway consists of two tracks, each 5ft gauge, with two cars—one ascending while the other descends. The cross ties on the iron bridge are yellow pine, 7ft. by 7ft. The stringers are also yellow pine, 6ft. by 8ft., and the ties on the balance of the track 8ft. by 8ft. A pine railing runs from the base to the top of the incline. It is 3ft. high, and quite fancy. It is to be painted—probably white. The rails are of the T pattern, and substantially fastened to the stringers. The cars are to be hauled up by a wire rope, and are provided with a safety cable which runs idly except in case of the breakage of the principal rope, when the drum about which the safety cable winds is held by means of a brake, thus preventing the accidental descent of a car.

◆

THE CONSTRUCTION OF GRAVEL WALKS.

By Wm. H. Grant, Engineer.

THE following general directions for the construction of gravel walks are largely the result of experience obtained during the progress of the work on the New York Central Park.

1st. Excavate a trench the width intended for the walk, 10 to 12in. deep, leaving the bottom even and regular, and slightly crowning in the centre, unless the walk is to be quite a narrow one. If the ground is not hard and firm, pass a garden-roller a few times over it. If it is wet and heavy, lay a line of 1½in. drain tiles (using collars) along the walk, as near the centre as practicable, and at a sufficient depth to be below the reach of frost.

2nd. Fill the space excavated for the walk 6 to 9in. deep with field or quarry stones, placing the smallest on top. Select the softest and easiest stones to break, and hammer them up on top of the stone filling until the interstices are sufficiently filled to exclude the gravel. Rotten or partially decomposed stones will answer well for this purpose, or, if this material is not convenient, use a light layer of gravelly loam, or hard pan. The surface will be further improved, previous to putting on the gravel, by sprinkling it and going over it a few times with the roller. The object of the process, thus far, is to secure a firm, well-drained foundation for the walk, having the surface interstices of the stone filling sufficiently closed to prevent the gravel from running down and filling up the voids below, and yet leaving free vent for surface water to percolate through.

3rd. If the stone filling is well prepared in this way, and the surface made even—no points of large stones projecting, &c.—2in. in depth, of hard fine gravel will be sufficient to complete the walk. In applying the gravel, a light layer should be first put on, and raked over evenly, working the coarser gravel forward into any interstices or inequalities of the stone filling. Moisten this layer and roll it down firmly and evenly. The second and last layer, to make the most agreeable surface, should be passed through a screen, the meshes of which are not more than 3-16th of an inch wide, and care should be taken, in applying it, not to rake up the first layer, and to spread it evenly—holding the handle of the rake nearly perpendicular. If it is not screened, more pains must be taken (with a fine rake) to exclude from the surface gravel that is too coarse and unequal in size to be agreeable to the foot. Next, and lastly, sprinkle and roll the whole thoroughly. The gravel should not be drenched, but only made moist or damp, in order to pack well under the roller. Until the walk has received some wear, it will be necessary, after dry weather, to trim the surface anew with the back of the rake, and to repeat the rolling occasionally. Roll after light rain, but never when the gravel is dry, or when too wet.

4th. A slight intermixture of clay or loam with the gravel will serve to make it pack or "bind" more firmly, when desirable, and with less use of the roller, but this should be done with moderation, and no vegetable mould should be introduced to encourage the growth of grass or weeds. It is a great advantage to procure pure gravel; its freedom from earthy or vegetable matter prevents, not only vegetation from taking root, but the liability to dust in dry weather, and a muddy or slippery surface in wet weather; it also prevents the action of frost. It is better, therefore, to avoid any intermixture of other substances that will defeat these objects.

5th. The surface of a walk should be a little crowned in the centre, and should be provided with outlets through the grass borders, at suitable points, to carry off sudden accumulations of water. Where the walk has much inclination, and also where the outside drainage, from adjacent ground, is liable to be brought to it, more frequent outlets, cross drains, &c., must be made.

6th. If, for any considerable distance along the walk, drainage water from sudden rains can not be conveyed away from it securely by these means, *gutters* must be made. These can be made in a variety of ways, but there are no gutters that give more permanent satisfaction, at a moderate cost, than those formed neatly with small cobble stones; suitable stones for the purpose can generally be selected from the gravel delivered for the walk, or from the pit from which it is obtained.

7th. *A system of walks*, extending over a large area of ground that is not naturally adapted to easy surface drainage, must have one or more *main underdrains*, with subordinate or branch drains entering them from various points of the system, and with inlets from the gutters of the walks, silt basins, &c.; all of which must be adapted to the local circumstances in each case, by special study or survey, and no general rule can therefore be given for their treatment.

8th. A walk can be cheaply made on light, well-drained soil, by simply removing the turf to the depth of three or four inches, and filling the space with gravel, raking the coarse forward into the bottom, and leaving the fine on top; one-half of the gravel in this case (in the bottom), may be of inferior quality.

Estimate of Cost of Gravel Roads and Walks.

The following estimates were made during the construction of the work in the Central Park, and are based upon the average prices then paid for labour and materials, except as is otherwise noted:—

Road	10ft.	wide,	without	gutters	0.60dol.	per ft.
,,	15		,,	,,	0.90	,,
,,	15	,,	with	,,	1.10	,,
,,	20	,,	,,	,,	1.30	,,
,,	25	,,	,,	,,	2.45	,,
	30	,,	,,	,,	2.80	,,

With Telford, paved bottom, instead of rubble, but in all other respects the same as above

Road	25ft	wide,	with	gutters,	2·95dols.	per ft.
,,	30	,,	,,	,,	3.42	,,

The following data are assumed:—

1st. That one foot in depth for the width of the road will be excavated, in ordinary earth, besides the additional excavation for drains; the surplus material excavated, it is supposed, will be needed in shaping the borders of the road in the vicinity.

2nd. That stones can be obtained (in the country) at 70 cents. per cubic yard.

3rd. That the necessary sledging, or breaking up of the larger stones, will cost 30 cents. per cubic yard; the depth of the layer of stones to be 9in. for roads of 20ft. or less in width, and 12in. for roads over 20ft. in width.

4th. That the best hard gravel can be obtained at 150 dols. per cubic yard; the depth on roads of 20ft. or less in width to be 3in., and on roads over 20ft. in width 5in., and the gravel to be very coarse.

5th. That the gutters are to be made of small cobble stones, set in a neat manner, and 18 to 20in. wide for roads of 20ft. or less in width, and of larger cobble stones, or selected field or quarry stones, and 2 to 2½ft. wide, for roads over 20ft. in width.

6th. That the roads are to be thoroughly rolled, and made in all respects in a substantial manner.

7th. One tile drain is estimated for the narrower roads, and two for the wider ones, sunk 3ft. deep below the surface.

The roads of 20ft. in width and under are intended especially for private roads. A variation in any of the data will, of course, affect the cost of the road; the cost will also be influenced by the extent of road made, a large amount of work being done at a proportionably less expense than a small amount. It is assumed in these estimates that not less a length of road will be made than about 500ft. This is as near as it is practicable to give general rates and estimates. There are many circumstances—of locality, facilities for economising materials and labour, &c.—that may reduce these estimates, and still admit of substantial work. There will also be cases where the cost of some one or more of the items in these estimates may be increased; as, for instance, in some localities it may not be practicable to obtain suitable stone without resorting to quarrying and blasting, which would increase the expense of that item.

Cost of Gravel Walks.

Walk,	5ft.	wide,	15	cents	per ft.
,,	8	,,	20		,,
,,	12	,,	50		,,

It is assumed that 1ft. in depth for the width of the walk will be excavated in ordinary earth; that 9in. in depth of rubble stone will be used, and 2in. in depth of gravel; and that the walks over 5ft. in width will be underdrained with tiles, laid securely below frost.

On side-hill ground, or where the wider walks are peculiarly exposed to wash, a gutter may be needed on one side, with occasional cross channels to turn the water off. For this there must be added—the work to be done in a neat manner with small cobble stone—10 to 15 cents. per running foot of gutter. By a proper disposition of "sodgutters," as heretofore explained, much of the exterior drainage can be excluded from the walk, thus obviating the necessity, in most cases, for a formal stone gutter, and protecting the gravel also from being swept off by heavy rains, for which no other means are so efficacious, or so simple and objectionable in application.

A special chapter might be written to illustrate the necessity of thorough drainage in connection with roads, walks and lawns. There is no greater difficulty met with in the construction and maintenance of such works than that caused by the sudden and heavy rain-falls of our climate upon large spaces and long unbroken slopes of ground. The amount of damage that is annually done for the want of proper safeguards and precautions is, in many cases, greater than the cost of preparing them. The gullying of roads and grounds is very annoying, aside from the cost of repairs; and if, after the occurrence of such a mishap, and all the dilapidations are made good, there is an apprehension that it may occur again at the next shower, there can be but little enjoyment to a proprietor of all his labours and expenditure The only remedy that can be suggested is in the treatment that has been pointed out—varying and adapting it, as must needs be done, in each particular case, to the local characteristics of the ground, after a careful study has been made of the premises and surroundings.

◆

Elm Trees in Dry Weather.—Mr. Menzies, the Deputy-Surveyor of Windsor Forest, gave evidence on Monday, before the coroner's jury who inquired into the death of a young man who was killed on Sunday evening by a bough falling from one of the elm trees in the Long-walk, Windsor-park. Mr. Menzies stated that elm trees such as those in the Long-walk were the most dangerous they had. During great heat and great drought, branches of elm trees were exceedingly liable to fall without the slightest notice or warning, and green branches much more so than dead ones, even in the calmest weather. He constantly warned pic-nic parties sitting under elm trees in hot weather of the danger they ran, and that they would be safer under any other sort of tree.

Cheapside and the Poultry to be Paved with Asphalte.—The City Commissioners of Sewers, at their meeting on Tuesday last, unanimously adopted the report of the Streets Committee, recommending, on the advice of Mr. Haywood, the Engineer to the Commissioners, that Cheapside and the Poultry be forthwith paved with the Val de Travers asphalte, as laid down in Threadneedle-street. The maximum cost will be 18s. per square yard, and 1s. 6d., for repairing.

Furniture & Decoration.

ON THE USE AND ABUSE OF ORNAMENT AND COLOUR IN THEIR APPLICATION TO HOUSE DECORATION.

(*Continued from page* 42.)

IN the decoration of our bed-rooms, paperhangings are almost universally used for the covering of the walls, and if properly hung, and well chosen as to colour and finish, may be considered as most appropriate. The choice of colour is not limited in quantity, although it is so in degree, inasmuch as dark or strong colours are out of place in bedrooms, the chief end to be kept in view being cleanliness, neatness, purity of colour, and unobtrusiveness, neatness in pattern and general arrangement, light and cleanly colouring, quietness and repose of effect.

In selecting the paper for a bed-room, care should be taken to avoid those spotty-patterned papers we have spoken against in a former article, as no class of papers can be more annoying or in worse taste than spotty patterns, especially in the bed-room. A bedroom, to be pleasant and healthy, should appear to be scrupulously clean, as well as being really so in fact. The days of heavy bed-hangings and darkness-producing window-curtains is happily gone by. Beds, bed-room furniture, and decorations are approaching something like what they ought to be in order to preserve health. The wall paper should be coloured in tints of light warm greys, with pink or reddish mauve outlines to pattern; light creamy drabs, with pattern in white, outlined with a darker shade of the same colour. There are some of these grey papers which have yellow outlines to the patterns; these, when hung, have a dirty look. This is always objectionable, as cleanliness is an indispensable in a bed-room paper. These light-tinted grey, or grey and white papers, are very pleasing in effect in all rooms which face the east or south, but when the room faces the wintry north the tone or tint of the paper should be of a warmer colour. If grey, the grey must have a larger portion of red in its composition, or else have a portion of red and yellow in its pattern. Good satin or glazed grounds wear the best, especially in these very light colours. The ground may be glazed, and the pattern dead colour, or *vice versa*. The effect is good in either case. As to their general utility, smooth or satin papers do not catch or hold the dust so much as if they were wholly dead colours, which are necessarily rough, and what dust the satins do gather is much easier brushed off than it is off the dead colours. Another advantage they have over dead colours is the fact that they do not absorb moisture or damp so soon as dead colours; the smoothness of the surface rather tends to throw off the moisture than to absorb it. Borders may be used with advantage to the appearance of the room. As a matter of taste we prefer to have them narrow and unpretentious when placed upon a pattern paper. They make a very appropriate and effectual finish to a bed-room. The ceiling may be either white, with a few tints of colour in the cornice, or the flat of the ceiling may be tinted with a colour which will contrast and yet harmonise with the prevailing colour of the walls.

The woodwork of a bed-room should be painted in tints of colour in harmony with the paper, For instance, if the paper has a grey ground with a white pattern, edged with pink or reddish violet, we should paint the panels grey, the stiles white, and the mouldings cream colour; and if there is a narrow bead on the inner edge of the mouldings next the panel, we should paint that pink or reddish violet; or if there be no bead, we should run a line of the same colour upon the panel. These grey, white, and pink papers are very cleanly, looking and pleasant; but they do not fulfil the conditions requisite to produce harmony. We therefore put cream colour on the moulding of the woodwork in order to supply that omission.

We object altogether to the use of imitations of woods in bed-rooms, excepting hotels or other such places where real hard service is required. Bed rooms, in towns especially, should be painted afresh every two or three years. This leads us at once to the consideration of what is really the most important aspect of the question—namely the sanitary condition of our bed-rooms, so far as regards our subject. Of all the rooms we inhabit the bed-room should be the freest from all suspicion of uncleanliness and from impure air. In our sleeping state we have less power to resist the injurious effect of foul air and other impurities engendered by neglect and uncleanliness. Personally we have an objection to paperhangings, from the fact that they are very liable to be used as a covering for the accumulated dirt of years. In many houses one paper is put upon another, time after time, until there is a gathering of perhaps five or six, and sometimes more layers of paper, paste, size and dirt, forming a mass of matter which only requires favourable circumstances to become putrescent, and in damp weather, or when closed up for a time, they soon begin to get mouldy and musty smelling. The accumulation of size, flour, paste, and the absorption during all these years of the foul gases created in all inhabited rooms, and which we believe wall papers absorb and retain, all tend to form a mass of corruption little dreamt of by those who inhabit them, and whenever there is the slightest damp in the walls the flour paste begins to ferment, mould forms, and we know not how many or what kind of diseases may be originated and fostered by such corruption. Let us turn for a moment, for the sake of contrast, to some of our farmhouse and rural cottage bed-rooms in Warwickshire, Worcestershire, and the northern counties. The rooms, as a rule, are low enough truly, and the accommodation is of the rudest, but we shall find the walls and ceilings perhaps whitewashed with lime, beautifully clean-looking, the bits of bed hangings and counterpanes white as snow, and trimmed with a strip of blue braid, or possibly they may be made of the old-fashioned blue and white gingham or check pattern; a strip of carpet at one side of the bed, or possibly all round it, a chair or two, and a table completes the furniture, but how clean and sweet smelling and health-giving everything appears!—and not only appears, but is so. No musty fusty smells — no decaying matter on the walls to create disease. In such a room we lie down with pleasure, and rise refreshed. No wonder that health comes back to us, and with the aid of fresh air, regular and simple habits, and good appetite, we regain lost strength and energy, and go back again to the daily routine of city life like giants refreshed, to battle and toil with the world again—for a time.

Now, in our town houses we reverse this state of things altogether. Every inch of floor must be covered with thick carpets, which are perhaps only taken up once in three months, and in many cases, once in twelve months; and when they are taken up, the amount of dust, dirt, &c., which gathers underneath them in that time is alarming from a sanitary point of view. When the carpet has been down for a length of time, the dust rises by the pressure and motion of walking, and thus makes the air we breathe impure; this will be the case however carefully they are brushed and swept; this is also one fruitful cause of bad smells, for wherever dust accumulates, foul smells will also exist. In houses where much gas is burnt in the lower rooms, the bed-rooms above are almost invariably unhealthy, as the burnt air ascends to the bed-rooms, vitiates the air, and thus injures the sleepers. We believe that there is no remedy for this, except every burner is connected by tubes or otherwise to a ventilating shaft, which will remove the burnt air and escaped gas as fast as it is produced. And we cannot see why this may not be done cheaply and effectually in houses and shops which are built; in houses to be built the matter would be simple.

All walls which have to be papered, even if they are new, should be well rubbed down with a large piece of pumice stone, cut and rubbed to a flat side—this will take off all bits and projections. All holes, cracks, and broken places should then be carefully stopped with plaster of Paris. The smallest crevice will serve as a breeding-place for vermin, and no house is safe from them, as they are often in the wood when the house is built. Whether they get into the unsound wood when on shipboard, or are brought from the forests, is a question we cannot solve. When the walls are well rubbed down and well dusted, they may be sized and papered in the usual manner, but care should be taken that all edges, corners, and laps, are well pasted down, so that there may be no opening for vermin to get under the paper. But if we are about to re-paper a bed-room, or, in fact, any room, the old paper should in all cases be stripped off, and every particle of the old paste washed clean off the walls; every hole and crevice should be stopped as before described. The walls should then be washed over with a weak mixture of carbolic acid and water, or other disinfectant, in order to destroy any remains of mould or fungi which may have germinated from the decay of the flour paste. Except this is done the mould is sure to appear again, and quickly, for there is scarcely any thing so difficult to eradicate if once it gets hold; but if these precautions were taken every time a room is re-papered our bed-rooms would be much more healthy than they now are. A great improvement would be made in our bed-rooms if the walls behind the skirting boards were plastered or cemented down to the flooring-boards, instead of their being as now unplastered, thus leaving a cavity for the accumulation of dust, and the harbouring of mice and other vermin, and the consequent conservation of bad smells.

A very nice style of decorating a bed-room is to paper it with one of those self-coloured papers (that is, paper that has been coloured in the pulp)—of which there are many tints made. They may be had from thirty to thirty-six inches wide. If the room is done with one of these, of a suitable tint, and a neat floral border run round the top and bottom, the result will be pleasing and good. These papers have an advantage over any other, inasmuch as they have no ground colour upon them, and thus we have less colouring matter on the walls than by any paper or other process. Bed-room walls simply coloured in distemper, with an agreeable tint of colour, and bordered with a paper border, are also very, clean-looking and healthy; in fact, this is the least objectionable manner of decorating bedrooms, as we get rid of the necessity of using flour paste, which is always a danger, and thus reduce the evil to a minimum.

Much discussion has taken place as to the injurious effects to be apprehended from the use of green paperhangings. We object altogether to their use in bed-rooms, in the first place as a matter of taste, and secondly, because there are certain bright greens which will not bear a sufficient quantity of size or glutinous matter to be mixed with them to bind the colour fast to the paper; the consequence is that there is always a danger of the green rubbing off and getting on to the night-clothes, of children especially, and thus injuring the system, and in dusting the walls the green will be brushed off the papers and lodge anywhere and everywhere in the room, and thus we may get it into our lungs, and we have no doubt but that in certain damp conditions of the weather, or of the air of the room, the green may give out exhalations injurious to health. A strong argument in favour of this view is the fact that we have known several working paperhangers who were always made ill if they had to hang one of these bright green papers, and we are strongly of opinion that if they are to be used at all they should always be glazed, so that the colour will not rub off easily. Intensely bright greens are decidedly dangerous, and the safest plan, if we are to have green papers, is to select what are called made greens, of which there are all shades; these, although not so bright, allow of a sufficient quantity of size to be used with them, so that they will not rub off, this being in ordinary cases the real point of danger.

(*To be continued.*)

◆

PARLIAMENTARY NOTES.

Southwark Park.—Mr. Locke, on the 14th inst., asked the Under Secretary of State for the Home Department, with reference to the deputation from inhabitants of the borough of Southwark which had been recently received by him, whether he had taken any steps with a view to prevent the erection of buildings in Southwark Park.—Mr. Knatchbull-Hugessen said the question related to a matter of some considerable importance. In 1864 an act was passed under which the Metropolitan Board of Works purchased 60 acres of land for a park. At the time of the purchase they intended to sell 16 acres of land for building purposes to recoup themselves for their expenditure of £100,000. The inhabitants had protested against this appropriation of the land. They alleged that the ground to be taken was land required by the population of the neighbourhood, and that, looking at the peculiar formation of the park, the severance would deteriorate the value of the remainder. The only step that he could take was to bring the matter under the consideration of the Home Secretary, and, if it was thought desirable to do so, to call the attention of Parliament to the subject.

The New Refreshment-Rooms.—Mr. Bentinck asked the First Lord of the Treasury whether her Majesty's Government intended to adopt the plan for new refreshment-rooms which had been altered from the plan of Mr. Barry of 1869, and with any and what modifications; and whether it was not to the advantage of the public service that that altered plan, which interfered materially with important architectural features of the Palace, should be prepared and executed by a competent architect, in accordance with the second report of the committee of the House of Lords.—Mr. Ayrton: As the question of the hon. gentleman, although addressed to the First Lord of the Treasury, relates to the business of the Office of Works—(hear)—I have to state that it is the intention, I believe, of the Secretary of the Treasury to lay on the table of the House in a day or two the estimates for the special service of the Houses of Parliament. That estimate will embrace the plans which have been submitted by the Office of Works for consideration to a Select Committee of the House, and unanimously approved of by them, and which I trust will lead to the convenience and comfort of hon. members. The hon. gentleman is pleased to say that the plan is altered from Mr. Barry's plan. Well, the plan is not Mr. Barry's, but one prepared by the officers of the Department of Works. The plan relates both to the House of Commons, and, in a small degree, to the House of Lords. The House of Lords, undoubtedly, in their first report, took great exception, in an architectural point of view, to some statements I had made. They combated my views at considerable length; but on reflection they presented another report, in which they acquiesced in my views—(laughter)—and the critical affair that arose between myself and the House of Lords is, therefore, at an end. (Cheers and laughter.) With regard to details, as I shall have to explain the estimate when proposed, it would not be right that I should now do so; but I can assure the House that the plans have been prepared entirely to meet the convenience of the House, on which members will be enabled to form an opinion, and, perhaps, a better opinion than any architect, however distinguished.

Sewage Utilisation Supplemental Bill.—This Bill was read a second time on Monday.

The Thames Embankment.—The Comptroller of the Household brought down on Tuesday, the following answer from her Majesty to the address of the house, respecting the open spaces on the Thames Embankment:—"I have received your Address, praying me to give directions that no public offices shall be erected on that portion of the Thames Embankment reserved to the Crown, and which has been recovered from the river at the cost of the ratepayers of the metropolis. As no public offices can be erected on the ground in question without the vote of Parliament, the house has in its own hands the means of giving effect to the prayer of the address. My Government will not ask for such a vote unless it has reason to suppose that it would be likely to meet the approval of the house. In reference to the prayer of the address as to the use to which the ground in question should be applied, it is necessary to observe that the property was created by the recent Act in exchange for valuable interests, and that such a limitation of its use does not appear to have been within the contemplation of the statute; and that if it is desired it ought to be imposed by an act of the Legislature or a bill for the purpose, which would give the opportunity of examining into the whole question in its present and prospective bearing. If such a bill is introduced I will give directions that the free discussion on it shall not be hindered by any formal difficulties which it is in the power of the Crown to remove, nor will any action be taken during the current year to appropriate the land in question, or to interfere with the decision of the question."

◆

BUILDING NEWS SKETCHBOOK. XXXVII

◆

DOORWAY, INTERIOR OF S. ALBAN'S ABBEY.

The doorway from which this sketch is taken is situated in the beautiful screen dividing the nave from the choir (or ante-choir or baptistry), which is somewhat like the high altar screen, and was probably built at the same time—about the 14th century. G. R.

◆

THE LEGAL STATUS OF BUILDING SOCIETIES.

A DEPUTATION, representing 116,900 members of building societies, having an aggregate capital of £5,000,000 established in various parts of the metropolis and the country, waited on Monday afternoon on Mr. Bruce, the Home Secretary, to urge upon the Government the desirableness of passing the bill now before Parliament which proposes to deal with their societies this session. Mr. T. Hughes, M.P., Mr. J. Locke, M.P., and Mr. W. M. Torrens, M.P., formed part of the deputation. It was pointed out to the right hon. gentleman by Mr. T. Hughes, M.P., that, under the law as it at present existed, building societies suffered great inconvenience from being classed together, under the jurisdiction of the Registrar, with co-operative, friendly, and other societies, with which they had no connection; and it was with the view of remedying this state of the law that the deputation begged the Government to have the Bill referred to passed this session.—Mr. Stainsby referred to the uncertainty which at present existed as to the *status* of building societies, especially as regarded their borrowing powers. The position of building societies was just now such that unless some change to the law were made there was a great chance of their being threatened with impending ruin.—Mr. Bruce asked what there was at present to prevent the passing of the Bill being put off for another year?—Several members of the deputation replied that what had recently taken place in the House of Commons and the law courts had created great distrust in the public mind, and a panic might at any moment be brought about.—Mr. Bruce reminded the deputation that the objections to the Bill had been raised on the Opposition side of the House. The Government were favourable to the Bill, and he should have moved it be referred to a Select Committee had there been time. In reply to Mr. Torrens, the right hon. gentleman said if the Opposition were appeased, the Government would support the Bill. If there was not time to pass a perfect measure they would support any feasible plan.—The deputation, having thanked the right hon. gentleman, withdrew.

Benefit building societies are now governed by 6 & 7, Will. 4, c. 32, and those provisions of 10 Geo. 4, c. 56, and 4 & 5 Will. 4, c. 40, which, although those Acts are repealed, are kept on foot for the purposes of building societies. By a Bill now before Parliament, it is proposed (says the *Solicitors' Journal*) to repeal 6 & 7 Will. 4, c. 32, and, by implication, the provisions of the other two Acts, and to substitute for them the provisions of the Bill; but the Bill proposes rather to consolidate than to alter the existing law relating to these societies. Some alterations are, however, to be made, of which the most important are the following:—"The appeal to the quarter sessions in the case of the registrar refusing to certify all or any of the rules transmitted to him is abolished. The restriction of the amount of shares to £150 is abandoned. The rules are to state the manner in which the funds of societies are to be invested. The rules are to provide for a general statement of the funds and effects of the society, with an account of all moneys received and expended on behalf of the society, being prepared at least annually, and attested by two or more members of the society, or other persons appointed by the auditors, and countersigned by the secretary. Amalgamation of two societies, or the transfer of engagements from one society to another, is to be feasible, with the consent of the major part of the trustees and of the committees of management of both societies, or of the majority of the members of each such society. A society is to be wound up voluntarily by five-sixths of the members signing the proposed plan of dissolution; or compulsorily on the petition of any member or creditor, if the Court shall so order. 'The Court' throughout the Act is to mean, in England, the county court of the district in which the society carries on business. Lastly, there is a clause in the bill empowering societies to receive deposits or loans 'to be applied to the purposes of the society,' but no member is to receive any interest or dividend by way of annual or periodical profit upon his share until it is paid up or realised, or until he withdraws from the society. This clause will set at rest the *vexata quæstio*—can building societies borrow money—certainly as regards all future societies, and as regards existing societies also, if it is held to be so far retrospective as to sweep them in, or is made so before the Bill becomes law. This clause, and the provisions placing building societies under the jurisdiction of the county courts, are practically the most important innovations of the Bill."

◆

COMPETITIONS.

Swansea Guildhall.—The plans of Mr. C. J. Phipps, F.S.A., of London, have been selected as the best by the committee of the Corporation of Swansea for the enlargement of their assize courts, and other alterations. The plans provide for an outlay of about £2500.

New Workhouse for Clitheroe.—At a meeting of the Building Committee of the Clitheroe Guardians, held on the 4th inst., the following plans for the proposed new workhouse were received and examined:—"Utility and Economy," "Acorn," "Fiat Justitia," "Design of Freemasonry," "Simplicity and Economy," "Faith," and "C.," seven in all. The committee made a preliminary selection of four designs, in the following order:—"Utility and Economy," estimated cost, £6500; "C.," estimated cost, £5984 (in this plan there was a deficiency of infirmary accommodation, but a letter had been received from the architect, in which he said that by doing away with the porter's lodge there would be accommodation for 38 more patients in the infirmary than at present); "Fiat Justitia," estimated cost £5500; and "Simplicity and Economy," estimated cost, £5500, with a contingency of £800. The Guardians (who appear to be unaided by professional advice in the selection of a design) have deputed the Building Committee to make the final selection from one of the four designs mentioned.

Margate Jetty.—At a special meeting convened for the purpose of considering the proposed extension of the jetty, the directors have come to the conclusion to take immediate steps for its enlargement and improvement, and advertisements will be forthwith issued inviting persons to send in plans, and offering a premium for the best design.

◆

The Romford Burial Board is taking steps to provide the town with a new cemetery, at an estimated cost of £4500.

Sherborne School of Art.—An appeal is to be made to the town and neighbourhood for the amount wanted (about £100), to enable the committee to open the school at once. Premises have been converted for the school at an expense of £92.

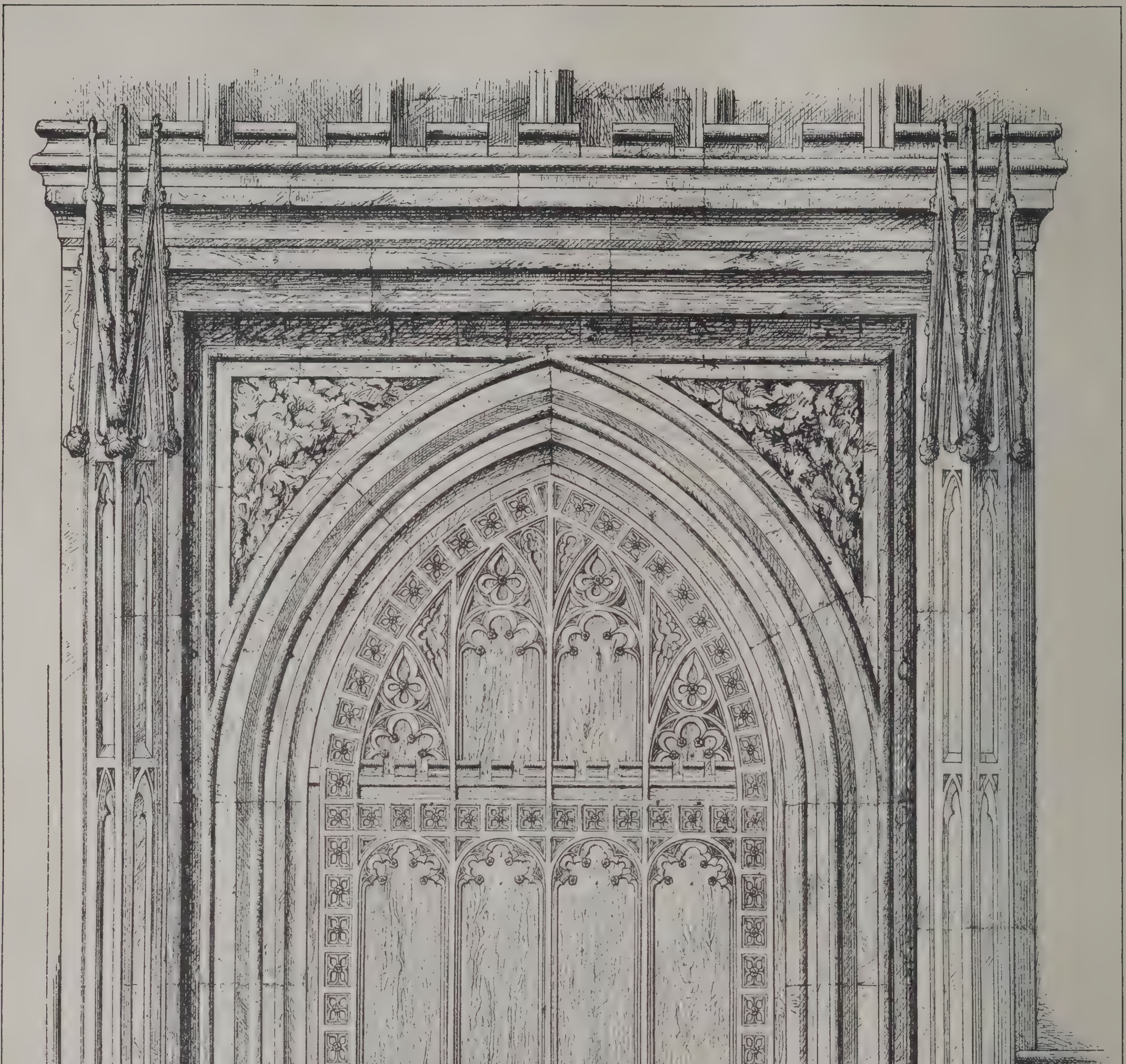
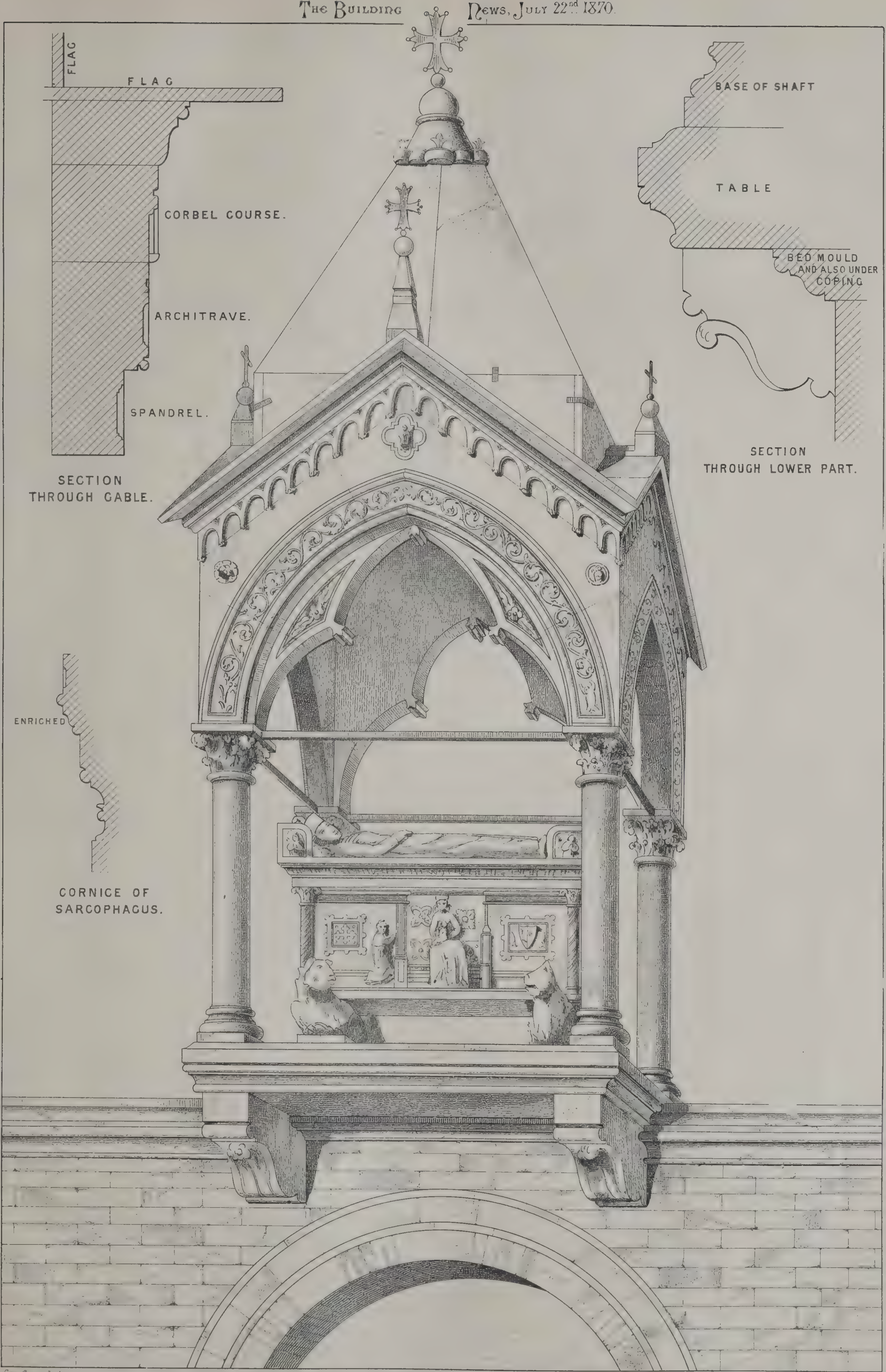

George Remington, Junr. 69.

Photo-Lithographed by Whiteman & Bass, London

Doorway, - Interior - of
Saint - Albans - Abbey - Hertfordshire.



Geo. Green, Lith.

Printed by Whiteman & Bass

TOMB OF GUGLIELMO DA CASTELBARCO, VERONA.

SKETCHED BY JAMS REDFORD, A.R.I.B.A. 1863.

TOMB OF GUGLIELMO DA CASTELBARCO, VERONA.

"In fair Verona, where we lay our scene," as our own Shakespeare expresses it, the great Italian poet Dante found a refuge ; it is also remarkable for the Roman amphitheatre, the Campanile, and its tombs. Our illustration is from a sketch made by Mr. James Redford, A.R.I.B.A., of Manchester, in 1863, and is a view of the monument erected to the memory of Guglielmo da Castelbarco (ob. 1320), who was the friend and adviser of the Scaligers, the *Capitani del Popolo*, and who lived in "Verona la Degna" at the same time (1302) as were numbered amongst its inhabitants Romeo de' Montecchi and Guilietta de' Capelletti ; or de Capelli, immortalised by Shakespeare.

The principal material with which the tomb is constructed is a red tinted marble, the bearing shafts alone being of white marble. Iron ties are used to connect the capitals of the columns and hold the monument together, "the one radical and condemning defect. This, however, is soon forgotten when one feels that there is no pretence ever or anywhere at its concealment. Notwithstanding this defect, one cannot help loving, and admiring them ; for there is a grace and beauty about the form and proportion of the Veronese trefoiled arch such as I have never seen, I think, elsewhere ; and the very flatness of the carving and the absence of deep moulding seem all adopted in order that nothing may interfere with the simple beauty of the outline of the arch."*

The pyramidal roof is formed of flags only, cramped together, and is without vaulting. The *sarcophagus* is supported by the sculptured representation of two couchant lions, and has carved upon it armorial bearings and the Virgin and Child, with the individual to whom the tomb is erected supplicant.

The monument is erected upon the wall, and over the entrance to the graveyard of the chapel of San Pietro Martire, formerly the cloisters attached to the church of S. Anatasia, of which Guglielmo da Castelbarco was a benefactor. In its remarkable position, in the busiest part of the town, the tomb strikes the stranger with a feeling of novel awe, and he cannot help but admire the poetic idea which placed the remains, apart from all contact with the earth and the quiet of a graveyard, where his fellow townsmen would look up to him still in death, and be ever reminded of his benevolence. The situation has also proved a place of safety, for there that recumbent effigy has lain for centuries undisturbed, making it appear that Guglielmo da Castelbarco is still watching over the city in which, during life, he took so prominent a part. Under its shadow, generations have played as children, learned as youths, bartered as men, and gone tottering down to the grave ; various exciting scenes have been enacted, and Verona itself has been lost and won many times.

◆

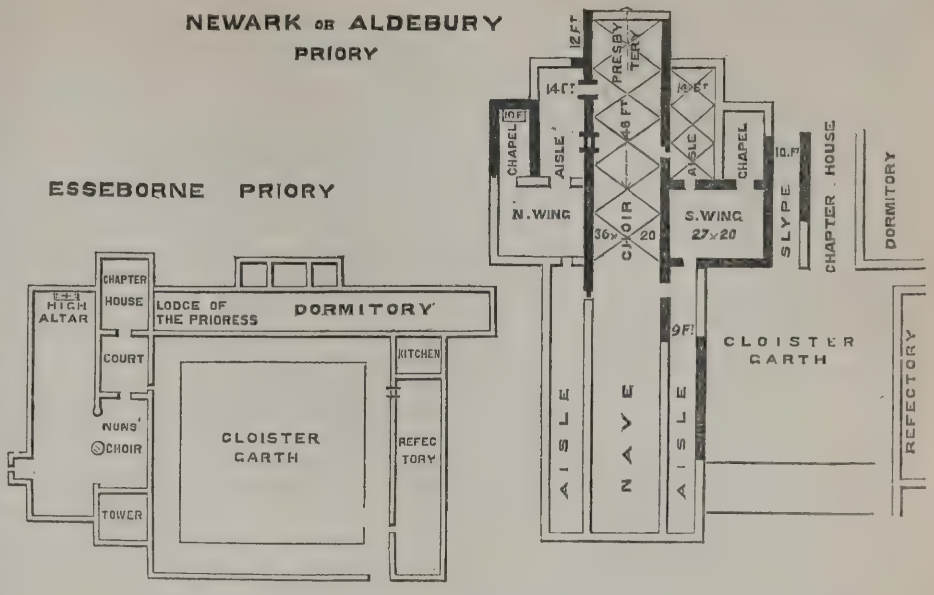
OLD PRIORIES.

◆

ESSEBOURNE PRIORY.

This Priory, stated to have been held by Benedictine nuns, is in an obituary roll of Durham called the Augustinian order, and is of the highest interest, as similar remains are extremely rare, Essebourne is about a mile distant from Midhurst. The remains are considerable, as will be seen by the accompanying plan. Is there no Wiltshire antiquary who will give us one of Lacock Abbey, which Mr. Bowles could not explain ?

The refectory, on the south side of the cloister garth, is now a barn, and in a miserable state of confusion. On the south side three out of a range of four upper windows remain, over deeply-recessed square-headed windows ; the south wall retains a large window-case entirely blocked up ; in the north wall is a large pointed arch, with rich ornamentation, which formed the principal entrance on the south-west ; and a large round-headed arch possibly formed the covering for the lavatory. The site of the kitchen only is preserved. In the west wall of the dormitory four pointed arches, with good mouldings, probably formed carols. A door in the north wall of the cloisters admits the visitor into a small open court, at the end of which is the chapter-house, which has three lancets under a comprising arch in the east wall, and a noble pointed arch of large dimensions on the west. A few corbels are fixed against the south wall of the chancel. Probably they carried a gallery, which must have been built in accordance with the following order :—In 1521 the Prioress, Joanna Sackville, was required to repair the cloisters and houses and to make "closure windows" (*clausuras fenestras*) in the church, on the east side between the chapel of the priory and the church." They had their own chaplain. In 1529, Sir David Owen required a "new stage choir to be built over the old choir, under such form as the nuns may come from their dortor in the Great Chamber, and from thence into the choir, and nobody to see them ; the said choir to be of timber, and the old choir to be taken away, and belfry ; and it is to be used as parcel of the church, with a partition to be made, so that none may come out of the church to the high altar in the chancel of the said priory." At the west end of the court a door admits into the nuns' choir ; and in the upper part of its south wall are four Late Perpendicular lights, which opened into Owen's upper choir, which formed a sort of double chapel similar to those mentioned in my "Sacred Archæology." A single Early English pillar, with a scolloped capital, with a half pillar and arch, divide the chapel from the church, and the intervening space was filled with a grille or carol, lattice work, called by the bishop, in his injunction, "closure windows" ; thus secluding the nuns from sight of the congregation.



At the east end of the chancel over the altar are three lancets, with a small round. Probably the west wall was similarly arranged, as the round remains over a three-light Perpendicular window. The north east window is a large lancet ; near it is a cinquefoiled arch, probably that of the founder, Sir John Bohun, but now occupied by an effigy of Sir David Owen, of the Tudor period. There is a north porch.

There are no remains of the base court or gate-house.

HARDHAM PRIORY OF AUSTIN CANONS.

This Priory is about a mile from Pulborough, and now forms a part of Mr. Challen's farm buildings. The remains include the cellarage of the refectory and the chapter-house, which retains three pointed windows at the east end, a north-east and south-east window, and the west front, consisting of three arches of equal height, having dog-tooth mouldings ; formerly a small cruciform ornament pierced their heads. The guide-books speak slightingly of these ruins, but they are nevertheless well worthy of a visit by the antiquary and artist.

NEWARK OR ALDEBURY.

The ruins of this Priory are situated at a distance of about two miles from Woking, close to the banks of a small stream. A little further to the south, on another branch of the river, is the old Priory Mill. The Priory was founded, it is believed, in the time of Richard I. The site was given to that sacrilegious glutton, Sir Anthony Browne. The remains include the presbytery, choir, south wing of the transept, part of the south nave, aisle, portions of a north chapel, and the south wall of the slype, forming one side of the chapter house.

The eastern limb had a groined vaulting, and (we may add with every probability) so had the central space over the crossing, which forms the most remarkable feature in the building. The choir was arranged in it, and completely shut off by walls from either wing of the transept, but in order to obviate the gloom and bareness produced by such an arrangement they pierced there solid screens above the level of the stall work, with two large Pointed windows on each side. From the entrance of the crossing to the extreme east end measures about 84ft., and as the internal width is only 20ft., and the vaulting was lofty, an effect of extraordinary height must have have been produced.

In Buck's view (ii. 282), the west gable wall, and part of the east wall of the refectory on the south side of the cloister garth, a considerable portion of the chapter house walls, and the eastern doorway of the slype, are delineated, together with the weather moulding of the dormitory gable, and a window below it. The south choir aisle was completely separated from the sacristy, and vaulted.

The choir aisles were 14ft. wide, and two low doors opened into them on either side ; above these were tall pointed windows, very deeply splayed at the base, where the pitch of the aisle roof abutted against them. A sacristy on the south and on the north a chapel approached by its own door in the west wall, ad-joined each aisle, and was accessible from the transept. The single window on each side of the presbytery is of its natural dimensions. The south wing of the transept is perfect on the east and west sides, there are three perfect windows in the clerestory; the south-east window has a curious sub-window inserted in the lower part, which lighted the sacristy roof. The gable has a large pointed window, and the bare wall beneath shows that lofty buildings —no doubt the dormitory—abutted upon it.

---

* "Brick and Marble Architecture in Italy." G. E. Street, F.R.I.B.A. 1855.

The fragment of the nave is of great interest; over a pointed door opening into a narrow aisle, 9ft. wide, is a very large window in the position of a triforium, and above it are the jambs of a clerestory light. The weather mouldings show the pitches of the various lean-to roofs.

There is but an insignificant amount of ashlar left. The walls have been completely peeled, and deep fissures show that rapid decay has set in, so that large falls may shortly be expected even in the wreck of this once beautiful building.

On the north side flows a little river, and at some distance is the Canon's Mill on the south, standing upon a stream abounding in trout and pike.

Mackenzie C. E. Walcott, B.D., F.S.A.

◆

ADULTERATION OF PAINTS.

By Professor Henry E. Colton.

It has been said that this is an age of adulteration. This may or may not the true. When prices are high those articles whose nature permits the frauds will be adulterated, but there is a point in the decrease of prices where adulteration cannot be done with profit, taking into view, first, the cost of the article of adulteration; second, the deterioration in the article adulterated; and the at least constructive damage to the adulterator if detected.

Almost the only adulteration of paints is sulphate of baryta, commonly called barytes. The oxide of zinc is frequently put into white lead, but it is questionable whether it is not an improvement rather than an injury. The commercial article, "barytes," is a sulphate of the alkali baryta, which has as a base the metal barium. It is insoluble in water and the weak acids, and but sparingly soluble in the most concentrated acids. Its specific gravity is about 4·84, being the heaviest known mineral, hence its common name among miners is heavy spar.

It is chiefly produced in the State that gave us the wooden nutmeg, and goes by the cant name of "Connecticut Lead." It is abundant in Virginia, North Carolina, Missouri, Georgia, and New Jersey. The best article now produced comes from Missouri. It usually accompanies lead ore; varies in colour from a milky to a clear white, and can easily be told by its great weight and crystalline structure. Its value depends upon its freedom from specks of iron, copper, or lead ore.

To prepare it for market the ore is cracked into pieces about the size of buck shot. These are then agitated in dilute sulphuric acid to dissolve the copper and iron, then washed with water, again treated with acid, then washed repeatedly with water, dried, and ground perfectly fine, after which it passes through a number of bolting cloths and is ready for market. Lead specks are more difficult of extraction. If not very numerous no effort is made to take them out, but if desirable to do so, the cracked ore is treated with strong hydrochloric acid, and sometimes with lime. Some manufacturers do what is called "floating," that is, after grinding the rock to flour dust it is run through a series of vats, water passing through them, and constant agitation being carried on. The lighter impurities pass off, and nearly perfectly pure sulphate of baryta precipitates. The impurities of the ore other than above mentioned are silica, carbonate of lime, and sometimes a little sulphate of strontia. The article differs very much in colour and fineness as put on the market; that from St. Louis has, just now, the highest reputation, it is in fact less crystalline in structure than any other—partaking somewhat of the fibrous nature of strontia.

The present product is about 20,000 tons per annum, but it is estimated that in 1865-6 fully 40,000 tons were imported into and produced in the United States. At that time the price per ton ran as high as 90 dols., now it is 35 and 40 dols. The imported article comes from Nova Scotia, Germany, and England. The profits of its production and manufacture have been very large; but it is doubtful if it can be produced with profit for much less than 30 dols. per ton.

We have been thus implicit with this article because of its whole product fully four-fifths enter into the adulteration of paints. Its other uses are for the adulteration of other articles, even medicines. We believe its only good use is as a substitute for white lead in enamelling paper collars. As an adulteration of paints it adds to the weight and injures the quality. The paints containing it are better than whitewash just in the proportion that they have a larger percentage of lead or zinc in them. Some are the merest shams, others have 75 and 80 per cent. of lead and zinc, and are proportionably valuable. Some of the latter have attained great reputation, especially when ground in a peculiarly refined oil, which contains some of the acids used in its refining. No person need be fooled by an adulterated paint. If he buys it, it is simply his own fault. If he desires cheapness more than durability and purity, he gets it. Every one knows when he buys a coat below the cost of the wool in it, and the labour on it that he is getting shoddy. Metal lead, for instance, is 8 cents per pound (gold); white lead, then, would likely be about 12 cents per pound (currency), ground in oil. Hence, if a man buys a paint at 8 cents, he should have sense enough to know he does not get a pure white lead. It is further the custom of manufacturers never to put their names with the words "Warranted Pure," on adulterated brands. The latter or the former may be on, but never both together. Besides, no respectable firm ever sells a customer an adulterated paint if he asks for the pure and is willing to pay its price.

HOW CAN THE ADULTERATION BE DETECTED?

In a late statement of how to analyse white lead in oil, published in the *Scientific American*, it was recommended to dissolve out the oil with spirits of turpentine. This is next to an impossibility, as that article is not sufficiently volatile, has itself somewhat of an oily nature, and some of the particles of the pigment will remain coated with oil, and not dissolve in the after process, hence creating an idea of impurity when the paint may be actually pure. Our experience has been large, and we prefer bisulphide of carbon to all other solvents of oil. It evaporates freely, takes less of it to do the work, and leaves the pigment cleaner; nearly as good is high gravity gasoline, say 80°. It is our custom to agitate the paint in the liquid, allow it to settle, and draw off. Place the pigment on a funnel, filter, and triturate again and again with the solvent. Then dry the pigment on a sand bath, wash with water and redry. Any one can easily tell from its look and feel if he has extracted all the oil. Perfect dryness and perfect freedom from oil is absolutely necessary. Dissolve the dry pigment thus obtained in dilute nitric acid. Strong nitric acid will not dissolve white lead; it must be diluted with four or five times its volume in water, perhaps more. The operation is accompanied with the evolution of carbonic acid gas. If all is dissolved it is pure lead or zinc—either oxides or carbonates. If there is residuum after repeated trials, with more or less dilute acid, it shows presence of an adulteration—most likely barytes, perhaps sulphate of lead. Take this and boil in hydrochloric acid; if it dissolves it is not barytes. If dissolved, pour into the solution a little hydro-sulphuret of ammonium; a black precipitate shows that you have sulphate of lead. If there is no precipitate, put in a little dissolved oxalic acid; a white precipitate shows lime. The sulphate of lead is seldom or never used as an adulterant in this country, the sulphate of lime never in paint. For zinc, pour into the nitric acid solution sulphuric acid, the lead will precipitate as sulphate; then into the liquid pour a little hydro-sulphuret of ammonium; a white precipitate will show zinc. There is, however, in the market a pigment containing a sulphate of lead, not crystalline in structure, and perfectly soluble in dilute acids. It is made by sublimation.

Whiting and terra alba are seldom or never used as adulterants for any white paint, They are too light, and turn dark in oil. Some colours, however, have terra alba as a base. The process indicated, if conducted with care, will give a perfect result. The main point is to get the oil out entirely; and with all due respect we assure our friends of the *Scientific American* that it cannot be done with spirits of turpentine.

There is just now coming into practice another species of adulteration which for worthlessness bids fair to eclipse the baryta paints. This is the use of water instead of the full quantity of oil or spirits of turpentine. A paint is valuable and durable just as it has the proper quantity of pure oil in it. This new adulteration is thus accomplished The soluble salts of the metal and alkalies dissolved in water and mixed with oil forms a sort of soap, add to this a pigment and it will mix and be held in solution. Small quantities of spirits of turpentine or benzine are added. To such an extent can this be carried that in some of the paint sold "Mixed ready for use," fully one-half is water. Their worthlessness for work exposed to the weather is evident. There are paints thus sold, however, which are properly mixed.

[Notwithstanding our correspondent's criticism, we insist that very good results may be obtained by proceeding as we directed in the article to which he refers. He seems to have overlooked the subsequent washing with alcohol, after the spirits of turpentine have been used to remove the bulk of the oil. Alcohol dissolves both linseed oil and turpentine, and by its use the solid substances contained in the mixture may be rendered sufficiently clear for subsequent treatment, if the oil is pure linseed, as we can vouch from experience. If the linseed oil used is adulterated with fish oil, rape-seed or cotton-seed oil, other solvents must, of course, be used. In that case ether or the solvents he names are better. The bisulphide of carbon, or ether, is not, however, available to painters generally. Benzine and gasoline are, however, good solvents, and may be advantageously substituted for the turpentine. Turpentine and alcohol are, however, to be found in all painters' shops. If the alcohol be heated to boiling, it will be more effective than when used cold, and less will be required.—Eds. of *Scientific American*.]

◆

ARCHÆOLOGICAL.

Somersetshire Archæological Society.—The annual meeting of the Somersetshire Archæological Society will be held at Wincanton, under the presidency of Sir William Medlycott, on the 23rd of August and two following days.

Kent Archæological Society.—A temporary museum of antiquities and objects illustrative of the archæology of the neighbourhood of Sittingbourne will be formed for the Congress of the Kent Archæological Society, which will take place in that town on the 3rd and 4th of August. Any person possessing such articles will oblige by sending them to Dr. Grayling, who has consented to undertake the arrangement of the museum, on or before the 2nd of August.

Charles Dickens an Archæologist.—At the time when "Pickwick" appeared, says a contemporary, antiquarian pursuits were despised by the general public, and the famous excursion to Cobham, where the inscribed stone was discovered, was written to ridicule them. Five and twenty years after, however, archæology found itself raised into the dignity of a science, and numbering among its votaries no less a person than the author of "Pickwick" himself. And at Cobham, too! This was in the year 1864, when the Archæological Institute met at Rochester. Dickens was on the committee, and an excursion, we find, was organised to Cobham. Whether another stone with Bill Stumps + His Mark, was discovered on that occasion we do not know, but it must have been very agreeable to the ladies and gentlemen present to have among them, whilst one of the party was deciphering a puzzling inscription, the author of the burlesque description of a scene which could not fail to recall to all who had read "Pickwick" that then before them.

◆

Inflammability of Rotten Wood Dust.—Dry wood dust blown into a candle gives a clearer and more intense flame than resin, and the wick becomes covered with a resinous crust, so that the burning of the candle is greatly retarded. As this kind of dust when coming in contact with a candle takes fire, it is unsafe to conduct manufactures in which it plays a part at night, when a light is required, and it is equally dangerous to strike a match. It appears that an accident occurred in a factory in Silesia where wood dust was employed, by which five workmen were fatally injured.

Building Intelligence.

CHURCHES AND CHAPELS.

Bloxworth.—Bloxworth Church, Dorsetshire, was re-opened on the 7th inst., the chancel having been entirely rebuilt at the expense of the rector, the Rev. O. P. Cambridge. The church, which is dedicated to S. Andrew, is of very great age. Originally a small Norman structure, it was enlarged and restored in the Early English period, and subsequently restored in Decorated times. The chancel has been restored in a substantial manner in its original Early Decoraed style. The exterior of the walls is of flint and stonework, the doorways and windows being of Doulting stone. The roof is open-timbered, having curved ribs springing from carved stone corbels; the ceiling is divided into panels by ribs, with carved bosses at the intersections, those over the sacrarium enriched by gilding and colour, and a quatrefoil ornament completing the cornice at the spring of the roof. On either side, dividing the nave and chancel, is an archway of Bath stone, of great depth and boldness, and having on each side a column of polished Irish marble, crowned with a carved stone capital. The eastern wall under the window sill is faced with Maw's encaustic tiles in a rich pattern. The east window is filled with stained glass by Heaton, Butler, and Bayne. Mr. George Evans, of Wimborne, gave his services gratuitously as architect, Mr. A. Green, of Blandford, being the builder.

Building and Enlarging of Churches and Chapels.—The Incorporated Society for Promoting the Enlargement, Building, and Repairing of Churches and Chapels, held its last meeting for the present session and until November, on Monday, at the Society's House, No. 7, Whitehall, S.W. Grants of money were made in aid of the following objects:—Building new churches at Bishopwearmouth, S. Peter, Durham; Deptford, S. Luke, Kent; Haggerston, S. Stephen, Middlesex; New Osney, in the parish of S. Thomas, Oxford; Tyndall's Park, S. Mary, near Clifton; Wyke, near Winchester. Rebuilding the churches at Builth, Brecon; Burton-Pedwardine, near Sleaford, Lincoln; Coleford, Gloucester; Haslemere, Surrey; Llanychaer, near Fishguard, Cardigan; Neenton, near Bridgnorth, Salop; Northam, Christ Church, in the parish of Southampton, and Uzmaston, near Haverfordwest; Enlarging or otherwise increasing the accommodation in the churches at Bosbury, near Ledbury, Hereford; Burford, Oxon; Chillingden, near Wingham, Kent; Cold Waltham, near Petworth, Sussex; Coningsby, near Boston, Lincoln: Frampton-on-Severn, near Stonehouse, Gloucester; Govilon, Christ Church, in the parish of Llanwenarth, near Abergavenny; Gunwalloe, near Helston, Cornwall; Holbeach, Lincoln; Litlington, near Royston, Cambridge; Llanarth, near new Quay, Cardigan; Stoke S. Mary, near Ipswich; Mottram-in-Longdendale, near Manchester; S. George's-in-the-East, London; Tisbury, Wilts; Watney-street, Christ Church, S. George's-in-the-East, London; and Widecombe, near Ashburton, Devon. Under very urgent circumstances, the grant formerly made towards reseating and restoring the church at Castlebigh, near Fishguard, Pembroke, was increased. The Society likewise accepted the trust of sums of money as repair funds for the churches at Llansaintfraed, near Conway, Denbigh; Westnewtown, S. Matthew's, Cumberland; Huddersfield, S. Andrew's; and Christ Church, Kensington, Liverpool. At this meeting it was unanimously resolved that, in the future consideration of grants to be made towards the building or restoration of churches, the accommodation which may be provided on chairs shall not be excluded from the claim.

Burton-on-Trent.—The trustees for the erection of a new Wesleyan chapel, Burton-on-Trent, have placed the work in the hands of Mr. George Lilley, contractor, Ashby-de-la-Zouch, the amount of the contract being £3365. The site for the new chapel is in Station street. The building is designed to accommodate 900 persons, and will be a Gothic building of brick, with stone dressings, having a tower and spire 120ft. high. Mr. E. Holmes, of Birmingham, who has recently completed two churches in the immediate neighbourhood, and also the new Burton-on-Trent Dispensary, is the architect employed.

Christ Church, South Hackney.—The foundation stone of this church will be laid on the 6th proximo, by Lord George Hamilton, M.P. The contract has been taken by Messrs. Axford and Whillier, at £4875, Mr. Wigginton being the architect.

Church of S. Luke, Evelyn Street, Deptford.—The foundation stone of a new church, to be dedicated to S. Luke, was laid on Tuesday, the 19th inst., by William John Evelyn, Esq., of Wotton House, Surrey, in the presence of the Bishop of Rochester, the clergy of the diocese, and a large concourse of spectators. The church is now being erected on a site which was given free of all charge, by Mr. Evelyn. It will accomodate 1010 persons seated on the ground floor; there are no galleries. The work has been taken by Messrs. Dove Brothers, of Islington, for £5287. The architect is Mr. Thomas Henry Watson, Nottingham-place, London. It will consist of nave and aisles, chancel, and chancel aisles, with a tower at the junction of nave and chancel. The materials used are Kentish rag stone with Bath stone dressings to doors and windows, &c., but not to the quoins, which are to be chisel-drafted. The walling is brought up at intervals to horizontal courses of long stones, and the colour is relieved by red tile bands laid as headers to break joint, 3 courses to each band, on top of the stretching courses of the rag stone. The style is 13th century Gothic, simply treated.

Cleator Moor.—The foundation stone of a new church at Cleator Moor, Cumberland, was laid on Monday last. The style of the edifice is Gothic, and sittings are to be provided for 600 persons. The church comprises a substantial tower about 30ft. square, nave, aisles, and chancel with aisles, that on one side being designed for an organ chamber, and the other arranged for a vestry. The total length of the church is about 130ft., and its width about 60ft. The character and scenery of the district required rather a simple and massive than an elaborately-decorated building, and this the architects have aimed at, and have produced their effect by good substantial work, thick walls, and simple mouldings. The external walls are full 3ft. to 3ft. 6ins. in thickness, while those of the arcade and clerestory are 4ft. thick. The main feature in the building is that all the roof is groined in brick. This is said to be the only instance of such treatment in modern church-building in the North of England. The whole of the interior of the building is lined with brick. The chancel is quadripartite, with moulded stone ribs. The nave is spanned by a single pointed arch, the arches of the clerestory windows being groined horizontally into it. The aisles are subdivided into bays by ribs of brickwork springing from stone corbels, whilst the tower, which is to be used as a baptistry, is again of quadripartite groining, with stone ribs. Adjoining the church will be an unpretentious but commodious parsonage. The total cost, exclusive of site, will be about £5000. Messrs. Cory and Ferguson, of Carlisle, are the architects, and Mr. Eilbeck, of Cleator Moor, is the contractor.

Moulton.—The Baptist chapel in this place, rendered interesting and noteworthy by the association with it of Dr. Carey, the celebrated Oriental linguist and missionary to India, was re-opened, after enlargement and restoration, on Thursday week. The chapel is a plain quadrangular structure, capable of seating about 300 persons. The building is of native stone, with brick dressings for the windows, the frames of which are of iron with circular head, and grained to represent oak. A porch at the south end, also of stone faced with brick, and having a sandstone coping, forms the chief entrance. The expense of the enlargement and restoration at Moulton was £300. Mr. Blunt, builder, of Pitsford, executed the work.

S. Barnabas, Grove-road, Bethnal-green.—This church, which was consecrated on the 2nd inst., consists of nave (56ft. high to the ridge), north and south aisles, and chancel, with organ chamber and vestry on the north side and spacious baptistry on the south; but the orientation is not strictly correct, the site not permitting it. There is an entrance at the west end of the north aisle, but the principal one is under the tower, which stands out from the church at the south-west angle, and, with the spire, forms a prominent object at the junction of Esmond and Grove roads. The style is Middle Pointed Gothic, freely treated, and the materials brick and stone, the interior being rather elaborately decorated with coloured bricks. The font is very handsome, and the fittings good. The church which seats about 900, and cost under £4000, was built from a design by Mr. W. Wigginton, F.R.I.B.A., architect.

Sarusfield.—The church of S. Mary, Sarusfield, Hereford, was re-opened after restoration on Thursday week. The fabric consists of nave and south aisle, chancel, sacristy, west tower, and south porch. Previous to the restoration there was no sacristy, that and the actual chancel being all one, making an ill-proportioned and inconvenient arrangement. The roofs, walls, and other features were plastered up and admirably whitewashed, in the usual style of the Churchwarden age. The work of restoration has been to remove the modern lath and plaster flat ceilings and whitewash, &c., throughout; to rake out and point the stone work; and to take down and rebuild the shattered south wall of the sacristy. The work has been substantially executed by Mr. John Walker, builder, of Hereford, in accordance with the drawings and specifications prepared by and under the supervision of Mr. George Cowley Haddon, architect, of Hereford and Great Malvern.

Stepney.—The Ecclesiastical Commissioners have instructed their architect, Mr. Ewan Christian, to prepare plans immediately for the new church of S. Benet, Stepney. The site is in the Mile-end-road, between the almshouses of Bancroft's Hospital and the Jewish burial-ground. The church is to be erected and endowed out of the funds arising from the sale of the site and fabric of the church of S. Benet, Gracechurch-street, at the corner of Fenchurch-street, which was pulled down two or three years ago to widen the thoroughfare.

Yarmouth.—On Tuesday week the new Congregational chapel in Gaol-street, Yarmouth, was formally opened. The style of architecture is Gothic, and sittings are provided for 700 persons. The chapel consists of transept and nave. There are no side galleries, but the roofs over the side aisles are much lower than that covering the central portion of the building. The cost has been about £3500.

Youlgreave.—The parish church of Youlgreave, Derbyshire, was re-opened on Wednesday week, after restoration under the direction of Mr. Norman Shaw, F.S.A., of London. The church consists of a massive tower at the west end, a nave with clerestory, north and south side aisles, and a chancel. The tower is Perpendicular, and it and the roof of the church appear to be of about Henry VII.'s time, but the other parts of the church are considerably earlier in date. The south aisle is Norman, whilst the north aisle and the main part of the church are Early English. At the east end of the south aisle a part of the bottom of the wall is of rude unsquared stones, rounded in form, and tradition points to this as having formed part of a previous Saxon church. In the restoration, all the decayed rafters in the nave and aisle roofs have been replaced, and the chancel roof has been almost entirely renewed; and this roof has also been raised, for, before the restoration, it was 6in. below the top of chancel arch. A new five-light Perpendicular window has been placed in the east end, and the floor of the chancel paved with Minton's tiles. A new reredos of alabaster, with columns and capitals of dark-coloured marble, has also been provided. There was an old oak rood-screen between the nave and chancel, and it is hoped that it may be so far restored as to be replaced. The old seats in the nave have been restored, and additional ones of the same pattern constructed. All the walls have been cleared of the accumulated whitewash of ages. A peal of eight bells, by Mears and Stainbank, has been hung in the tower. The work of restoration has been carried out by Messrs. Pearson Bros., of Leeds, and the hot-air apparatus is by Haden, of Trowbridge. The chancel, which has been restored at the sole charge of the Duke of Devonshire, has cost about 1100*l*., and the general work will amount to about 3000*l* more. Mr. Norman Shaw, the architect, has scrupulously preserved or restored all the characteristic features of the church.

BUILDINGS.

Clerkenwell.—At a meeting of the Middlesex magistrates last week, a report was brought up from the visiting justices of the House of Detention, Clerkenwell, with respect to the proposal to enlarge the building. The report (which was adopted) stated that since the 24th of February last, when the court determined that an enlargement was necessary, and directed the clerk of the peace to serve the necessary notices for the acquisition of the lands and houses required for the purpose, and to submit plans to the Secretary of State for approval, every exertion has been made to carry out the wishes of the court. After the approval of the Home Secretary had been obtained for the plans, working drawings and specifications were prepared, and tenders for the erection of the additional buildings had been procured. The visiting justices now accepted the tender of Mr. W. Henshaw for performing the work, at a cost of £10,685, which was the lowest of ten tenders obtained from different firms, varying from £13,250, down to the amount mentioned in the proposal which had been accepted. The total outlay which would be necessary was £44,660, which was made up of £30,970 for land, £10,685 for building, and £3000 for architect's commission, legal, and other expenses.

Lambeth.—A preliminary prospectus has been issued of a proposed new company, under the title of the Royal Victoria Palace Company, with a capital of £50,000, having for its object the purchase of the lease, properties, &c., of the well-known Victoria Theatre, in the Waterloo-road, and converting it into a large music hall. The cost of the necessary alterations and decorations is said to be estimated by "an experienced architect" at £10,000.

New Theatre, Dublin.—The Lord Lieutenant having granted a patent for the erection of a new theatre at the top of Grafton-street, Dublin, the promoters have commissioned Mr. C. J. Phipps, F.S A., of London, to prepare plans.

St. George's-in-the-East.—The foundation stone of a new infirmary for the poor of St. George's-in-the-East was laid on Tuesday week by Mr. Fraser, Chairman of the Board of Guardians. The new building is to be erected on the site of a number of small houses adjacent to the workhouse, on the side nearest the river, and is intended to accommodate 300 of the sick poor of the parish. Mr. A. Wilson is the architect, and Mr. Ennor, of S. George's-in-the-East, is the builder. The cost will be £27,500.

Sunderland.—Extensive new ironworks on the Hylton Castle estate were commenced eight weeks since, and are now assuming a tangible shape. A tall chimney-stack, which is to reach the ultimate height of 200ft., is rearing its form on the river bank, just below the Dene farmhouse. Occupying an extensive area around the stack are masses of solid masonry, of brick and concrete, to form beds for the ponderous machinery which will be employed in the new works, and nearer the river bricks are being manufactured from a bed of clay. The cost of the new works and plant, when completed, will be about £100,000, and it is probable that ultimately employment will be afforded 1800 ironworkers. This will involve the settlement of a large population, and the creation of a new town round the works. Already, in a field to the west, a commencement has been made with houses for the manager and foreman, and seventy workmen's cottages.

The Moberly Library at Winchester.—The School Library, which has been built by subscription among Wykehamists as a memorial of the Bishop of Salisbury's Head-Mastership, is now nearly completed, and the ceremony is fixed for the afternoon of Domum Day, Tuesday, July 26, when the Bishop of Salisbury, Sir William Erle, the chairman, and other members of the committee, are expected to be present; and it is hoped there may be a large gathering of the Wykehamists. The new Moberly Library is a handsome room, 86ft. long, 21ft. wide, with deep bay windows, and 23ft. high, and will be a great addition to the school buildings. Mr. Butterfield is the architect.

TO CORRESPONDENTS.

We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

Received.—C. R.—S. H.—C. B. A.—M. C. and Co.—A. R. and Co.—T. G.—T. C. M.—J. T. W.—J. M.—T. N.—Rev H. H.—J. M.—W. R. T.—T. B. H.—W. H.—W. and S.

M. Carpentier (Bœiœil).—All the numbers have been forwarded. We are gratified by the receipt of your kind letter, and should be very glad indeed to hear from you on the subjects you name. The writer of the articles on the Exhibition of 1867 is gratified by your approval of his criticisms. All designs you may send will be carefully examined, and returned if not used.

J. Langham.—In all probability.

B. J. T.—The Sketch Book will consist of about 50 plates.

W. J. C.—It will all depend on the character of the draw-

Correspondence.

PATENT VICTORIA STONE.

(To the Editor of The Building News.)

Sir,—Be good enough to allow us a very short space in answer to Mr. Trickett. 1. As Mr. Trickett says he did not make the prophecy in question, we presume there was some mistake in the matter; but we had no reason to doubt our information. 2. Our stone is made to suit specially the various purposes for which it is required; our pavement with a view to hardness; lintels, girders, &c., with a view to transverse strength. Our challenge was to compare flagging in hardness, and a beam in transverse strength.

If Mr. Tricket prefers a landing to a beam, let him name the size. We only stipulate that our landing shall be allowed six months for seasoning.—I am, Sir, &c.,

The Manager, Victoria Stone Co.

BUILDERS MAKING PLANS.

Sir,—Your correspondent ("An Old Subscriber") would not be so much surprised at builders preferring to work from their own plans to working for some architects if he had a little experience as a builder. There are architects who abstract as much money as they can from the builders, besides harassing them in all manner of ways; and I have many times heard builders tell with impunity how they can buy certificates after their work has been condemned. If builders are expected to be honest and honourable, architects should be honest and honourable too. There are many architects who cannot get builders to have anything to do with them; and there are many first-class architects (and honest) who can command the most respectable builders. The risk and responsibility of builders on contract work are so great that the sympathy of the architects should be with them instead of against, as it often is when their work is honest and good. Of course no architects can have any sympathy with scamping builders. It is therefore not to be surprised at that builders are shunning architects' contracts. Let architects wash their own hands and be honest before they complain of builders.—I am, Sir, &c.,

July 18, 1870. Builder.

PRICES OF TIMBER AT SALES.

Sir,—We write in order to inform you that in our opinion the quotation of prices realised at the public sales of Churchill and Sim, &c., are calculated to be very detrimental to the interests of timber merchants generally, as even if the quotations were correct, they would be very misleading at the best of times; but when they are altogether fallacious—as they always are—the evil is even greater. In corroboration, we call your attention to the report in this week's number:—

	£	s.		£	s.
1st Christiana	11	10	instead of	19	5
1st and 2nd Gefle	10	0	,,	12	0
3rds ,, ...	9	10	,,	10	0
1st and 2nd Husum	9	10	,,	11	0
3rds ,, ...	8	10	,,	9	10
4th Gefle....................	8	0	,,	9	0
1st and 2nd Soderham ...	8	0	,,	10	15

&c., &c.

The above represents the difference between your report and what the deals were absolutely knocked down at—mind, not the price at which they were sold; for in many cases the buyer would have to give Churchill and Sim a considerable advance on the bought-in prices.—I am, Sir, &c.,

J. A. Rosling.

Timber Wharf Sawing and Planing Mills, Southwark Bridge, Bankside, S.E., 16th July, 1870.

"THE PERPLEXITIES OF BUILDING."

Sir,—Mr. Burden arrogantly questions the accuracy of the statements contained in the paragraph under this head, which appeared in The Building News for July 1; but can he deny that the differences which have arisen between himself and the contractor have kept the Islington Guardians waiting a long time for their new workhouse? If not, he has no ground of complaint against you for reproducing from a local paper the paragraph in question. I see that the Guardians have determined to take vigorous action in the matter, and if they do not succeed in bringing about a friendly feeling between architect and builder, I hope they will, for the sake of the ratepayers and the poor of the parish, manage to get their new workhouse at Holloway completed.—I am, Sir, &c.,

Note-taker.

SHREWSBURY MARKET BUILDINGS.

Sir,—A paragraph in your issue of July 1st, headed "Certifying for Extras," referred to a meeting of the Shrewsbury Town Council, in which it was stated that I declined to furnish particulars of the extra works at the markets.

In reply, I beg to say I delivered a detailed account of seventy-two pages, giving totals of each item, which was returned to me to fill in the prices. This I declined to do until I had laid the matter before the Royal Institute of British Architects, and obtained their opinion thereon, and the following is an extract from the secretary's letter on the subject:—

"The Professional Practice Committee consider that you were quite justified by professional custom in declining to price out each detail in the account, and they are also of opinion that in supplying the details themselves it was unusual and needless to specify them with such minuteness."

As to the amount of extras, stated by you to be of the enormous sum of £11,846. This was without giving credit for variations and omissions; the amount of cash paid to the builder being £22,271 14s. 10d., and his contracts £16,976, leaving the sum of £5,295 14s. 10d. as the extra amount, and of this sum nearly £4000 was spent by direction of the committee in additional vaulting under the markets and the great depth of the foundations, and nearly £1000 on the fixtures.

In my last letter to the town clerk I stated my willingness to submit the whole of the building to be measured and priced out according to the schedule by some independent surveyor mutually agreed upon, or by one on each side, with power to call in an umpire, and if the amount agreed at by this course be less than my award, to refund the amount, and pay all costs; if, on the other hand, it was greater, the committee would undertake to pay me the excess.—I am, Sir, yours &c.,

Robt. Griffiths.

Stafford, July 18, 1870.

ARCHITECTS' PUPILS.

Sir,—Some time since there appeared a series of replies to questions propounded in your "Intercommunication Column," with regard to the duties of an architect's pupil, and although it be a vexed and painful subject, I would fain extend it, touching more particularly on the injustice practised by architects towards their pupils. Accidentally turning to an article in the *Builder* of August, 1843, on the "Remuneration of Architectural Draughtsmen," the writer, after pointing out the talent and education necessary in order to become a neat and expeditious draughtsman, positively states that they are the worst-paid class of men of the whole body of clerks. And as then, so now, we have to mourn over the same, and even a worse state of affairs. Let us, then, try to investigate the reason, by tracing it to its first cause—and we have not far to look around us in order to explain this somewhat startling fact, for a superficial observer would at once see that it is mainly owing to that wholesale system of taking pupils which causes our assistants to be so badly paid, and fills the advertising columns of The Building News week after week, with "Situations Wanted." This system of pupil-taking is growing worse and worse, and it is high time something was done to check it, for the manner in which many architects make it a practice of augmenting their purses by taking pupil after pupil to serve them for a term of three, four, or five years, as the case may be, and after that dispensing with them, in order to make room for more, is not only ruinous to the profession, but a scandal to it, and cannot be too strongly reprobated. A solicitor, no matter how extensive his practice, can only be possessed of two articled clerks at a time, and why should an architect enjoy a greater privilege? I maintain, moreover, that when there are three or four pupils in an office where there ought only to be one, all must nevitably suffer, for someone must, and in some instances the whole, act in the treble capacity of pupil, clerk, and errand-boy. And then there is a great deal of disinterestedness and indifferentism on the part of the master with regard to his pupils; he cares little or nothing as to their future welfare, whether they become competent as assistants after having served their articles, or no; he takes little or no trouble to teach them anything, unless he be necessitated to do so in order to carry out something he cannot attend to himself; and the clause inserted in every pupil's articles, binding his master to do his best to teach him the profession in all its branches, is entirely ignored and nullified. I fear we must despair of reform until architecture be made more entirely a profession, and until some restriction be brought to bear upon the architect, for, as the writer before alluded to observes :—"Architects will not give high salaries to assistants as long as they can fill their offices with pupils who pay them large premiums for being there." It has been argued that if there are *ona fide* grounds for complaint the pupil should seek for redress by an action at law for damages for breach of contract, but this is not only an unpleasant way of proceeding, but it is a doubtful way, for it is a critical thing to legislate between master and pupil. I admit that it depends in a great measure upon the pupil himself as to whether he will become master of his profession, for in these days of competition between architects' pupils and skilled artisans who have every facility for obtaining a knowledge of drawing, it is not only necessary that he should have a thorough training from his master, but that he should study hard himself in order that he may keep pace with his fellow competitors.

Pardon me for encroaching so far on your valuable space, Sir, but I feel this to be a momentous subject, and have offered these observations with the hope that the matter may be further agitated, and that they may in some slight measure tend to bring about that "architectural millennium" so devoutely to be wished for.—I am yours, &c.

AN INJURED PUPIL.

ARCHITECTURAL ASSOCIATION EXCURSION.

SIR,—In reference to a paragraph you inserted last week on the proposed excursion to Lincoln, may I ask you kindly to insert the following alterations which have since been made in the programme, by which greater advantages will be gained for those attending, and the expenses of the excursion diminished?

I shall be glad to forward further particulars to any one who purposes attending.—I am, yours truly,

JOHN S. QUILTER, Hon. Sec.
9, Conduit-street, W., July 20.

The members will assemble at Lincoln on Monday, Aug. 22nd, and the first meeting will be held in the Assembly rooms at two o'clock, when Mr. Sharpe will deliver his introductory lecture on Lincoln Cathedral. The remainder of that and the whole of the following day will be devoted to the examination of the Cathedral and other buildings in Lincoln, and a meeting held in the evening at the Assembly rooms. Divine service is held in the Cathedral at 10 a.m. and 4 p.m. On Wednesday, August 24th, there will be an excursion along the Cliff-road to the south of Lincoln, and visits paid to Caythorpe, Fulbeck, Leadenham, Wellbourn, Wellingore, Navenby, Coleby, Harmstone, Waddington, S. Mary Wigford, and S. Peter's Gowts, returning to Lincoln. On Thursday, August 25th, there will be an excursion from Lincoln to Sleaford, and the following churches will be visited:—Silk Willoughby, Osburnby, Threckingham, Billingborough, Horbling, Swayton, Holpringham, Heckington, and proceeding to Boston. On Friday, August 26th, an excursion will be made from Boston to Spalding and Sutton visiting Gedney, Fleet, Holbeach, Whaplode, Weston, and returning to Spalding. On Saturday, August 27th, the party will proceed from Spalding to Peterborough, when the Cathedral will be visited, its architectural history described by Mr. Sharpe, and a meeting will be held at Peterborough on Saturday afternoon, which will conclude the excursion. Arrangements are being made for the board and lodging of members coming from a distance, and for their conveyance to and from the churches to be visited, particulars of which will be forwarded to all those who give timely notice of their wish to avail themselves of the opportunity. It is expected that the expenses for the week, exclusive of the railway fares, will not exceed £3. Members attending the whole, or any of the different meetings and excursions, are requested to give notice of their intention either to the Honorary Secretaries of the Architectural Association, No 9, Conduit-street, London, W., or to the Rev. G. T. Hervey, Honorary Secretary of the Lincolnshire Diocesan Society, on or before Monday, August 15th. J. S. Q.

THE CORN EXCHANGE COMPETITION.

SIR,—In your notice of the awards made in the recent competition for the re-building of the Corn Exchange, Mark-lane, by some mistake the proper order of our names was reversed. May I ask you to state that the award of the second premium, has been made to the design marked "Progress," the joint production of Robert Hesketh and Thomas Henry Watson—*seniores priors*. I am, Sir, &c.,

THOMAS HENRY WATSON,
9, Nottingham-place, W., London, July 18, 1870.

Intercommunication.

QUESTIONS.

[1900.]—STONE DUST IN MORTAR.—In a work I am carrying out, I have suspicions that the builder puts stone dust into the mortar with the lime; the lime is, I believe, pure when brought on to the ground, but the stone dust is added when it is made into mortar. The mortar is not so tough as I think it should be. Can any one inform me how I can detect stone dust in mortar, either by analysing or otherwise?—G. J. C. C.

[1901.]—ARCHITECTURAL PERSPECTIVE.—Can some one recommend me a good book on architectural perspective—*i.e.*, perspective taken from plan and elevation?—G. A. MOORE.

STATUES, MEMORIALS, &c.

MUCH WENLOCK.—A monumental cross has just been erected in the new burial ground at Much Wenlock, to the late Mrs. M. Gaskell. The base is a large square of polished Aberdeen granite; above this is a square of polished black serpentine, the two being 6ft. high. Then comes the base of the cross—a square with four inscriptions—with a centre square rising 8ft. from the cross. The whole of the work was executed by Mr. Wright, of Pimlico, from a design by Mr. Polgrave, of London.

NEW CROSS FOR THE ROCK OF CASHEL.—Messrs. Earley and Powells, of the Camden-street works, Dublin, have just completed a fine piece of art work. It consists of a large cross to be erected on "The O'Scolaidhe Monument, St. Patrick's Rock, Cashel," and stands about 26ft. in height above inscription stone on monument. The cross, with its shaft and pedestal, is of Portland stone, specially selected from the quarries. The shaft at its base is 2ft. 8in. by 2ft., diminishing upwards to 2ft. by 1ft. 8in. under the arms, the extreme width of which is 7ft.

WATER SUPPLY AND SANITARY MATTERS.

RETFORD.—We are informed on official authority that on Monday next (the 25th inst) Arnold Taylor, Esq., will hold a Government inquiry into the sanitary state of four parishes of East Retford, West Retford, Ordsall, and Clarborough, comprising the town of Retford.

BRENTWOOD.—A memorial having been sent to the Secretary of State by some of the inhabitants of Brentwood, alleging that the Vestry refused to carry out all or any of the recommendations made in the report of Mr. Arnold Taylor, the inspector, with respect to the water supply and carrying out a system of sewerage for the hamlet, a letter has been received, asking that the Vestry will inform the Secretary of State whether the allegations contained in the memorial are true, and, if so, that they will show cause why an order should not forthwith be issued, under the 49th section of the Sanitary Act of 1866, limiting a time for them to set about the performance of their duties as regards water supply and drainage. The letter concludes thus: "Unless within two weeks from the date of this letter (July 8), you show cause accordingly, the order will be issued without further notice."

AYLESBURY SEWAGE.—At the last meeting ot the Aylesbury Local Board of Health the chairman read the report of a committee appointed some few weeks ago to inquire into the best mode of disposing of the town sewage. The report stated that the committee had visited Bedford, Romford, Leamington, and Warwick in the pursuit of their inquiries. At Bedford, Romford and Warwick, the sewage is disposed of by means of irrigation; at Leamington, the A B C process is at work, but about to be abandoned in favour of irrigation. The committee is of opinion that the A B C system is not a success, and say they had occular demonstration that the noxious matter had only been partially removed from the effluent water, which still fouled the bed and banks of the river; they therefore unhesitatingly recommend the disposal of the sewage of the Aylesbury district by means of irrigation, leaving it to the Board to determine the mode and direction in which this principle shall be carried out. From information obtained during the inquiry, they consider it will be necessary to secure the command of not less than one acre of land for every forty or fifty of the population of the district—that is to say, 140 to 150 acres of land ought to be secured.

TWICKENHAM.—ALLEGED NEW METHOD OF DEALING WITH SEWAGE.—At the last meeting of the Twickenham Local Board, Mr. Ramsay, the surveyor to the Board, stated that for some time past he had been studying the drainage question, and he believed, after all, that he had hit upon a scheme of his own, which would be the system for the Board to adopt; but not having secured a patent, he could not give his system in detail at present. However, if the Board would meet him in the expense of erecting a necessary temporary building, which would cost £30, he was so sanguine of success, that he would pay half if the Board would find the other half, and as his scheme was so simple—no machinery being required—it would be cheaper by far than any other proposed. The Board consented to bear half the expense. We understand that the whole operation of utilising the sewage by Mr. Ramsay's method is carried out and completed within a building in the most simple and inexpensive manner, the solid precipitate being rendered entirely free from offensive smell, and the effluent water sufficiently pure for discharge into the river.

DRY ASH CLOSETS.—Respecting the dry ash-pit system, Dr. Syson remarks: "Nothing positive can be said as to the success or non-success of the new system of dry ash-pits until it has stood the test of a hot summer. I consider the fact that by means of it the old wet sunken ash-pits are for ever abolished to be in itself a great step in the right direction."

LAND AND BUILDING SOCIETIES.

ACCRINGTON AND DISTRICT PERMANENT BUILDING SOCIETY.—The first annual general meeting of the members of this society was held on Thursday week at Accrington. The report and balance sheet showed that the total amount of subscriptions received up to June 18 last was £2049 13s. 6d.; total subscriptions withdrawn, £44 16s.; total amount of loans, £1694 15s., of which sum £350 5s. has been repaid; number of members, 120; number of shares issued, 1316. A dividend to the shareholders of 6 per cent. per annum was declared.

IMPROVED INDUSTRIAL DWELLINGS COMPANY (LIMITED).—At a meeting of the directors of this company on Tuesday last (Sir S. H. Waterlow in the chair), it was decided to recommend the payment of a dividend at the rate of 5 per cent. per annum for the half-year to the 30th June, and to carry forward a balance of £2588, which is equal to a further 4 per cent. on the subscribed capital. The receipts have been £6951 13s. 7d., and the expenditure, including all contributions to the reserve funds, amounts to £3523 8s. 9d., leaving a balance of £3,428 4s. 10d. The net profits have been at the rate of £5 17s. 2½d. per cent. No interest has been charged on capital expended on works now in progress, or revenue would have been improved by a sum equal to 15s. 3½d. per cent. The report of the directors states that, with one exception, the general position of the company's estates, on which £167,789 has been already expended, must be regarded as highly satisfactory.

LEGAL.

DISPUTE AS TO STONE-DRESSING.—ELLIS v. CARR AND ANOTHER.—This suit, heard at the Wakefield County Court on Tuesday week, was brought to recover £17 10s. 8½d., being the balance of an account of £26 16s. 2½d., for dressing stone. The plaintiff is a builder at Horbury, and he was employed by the defendants, who are woollen extractors, carrying on business at Coxley, near Middlestown, to hew the stone for a boiler shed. The plaintiff charged for the job by day-work, but the defendants contended that the agreement was that the work should be charged for by the piece. Mr. Law, of Dewsbury, the architect of the building, deposed that he measured the stone as the work was done, and found that, at ordinary piece-work prices, the amount due to the plaintiff was £14 4s. 10d., including 17s. 6d. for day work, which it was admitted had been performed by the plaintiff's men. His Honour gave a verdict for £5 10s., including the sum paid into court (£4 10s. 7d.), but because of the exorbitant claim made by the plaintiff, he refused to allow costs of either attorney or witnesses.

INSUFFICIENT FOUNDATIONS.—CHAPMAN v. LEE AND OTHERS.—At the Grimsby County Court, on Thursday week, the case of Chapman v. Lee was heard. The plaint, which has several times been before the court, was originally brought to recover compensation for damage done to a house belonging to plaintiff, by the sinking of the ground on which it stood, caused by placing a heavy building (viz., a friendly societies' hall) on the ground adjoining. At a former hearing, his Honour decided that the plaintiff was not entitled to recover the damages to the house, as it had not been built twenty years, but he would grant a case for the court above to determine whether the plaintiff was entitled to compensation for the damage to the land, which had been sunk below the horizontal plane by the negligence of the defendants in placing so heavy a building upon an insufficient foundation. The points of the case were argued by Mr. Wintringham for plaintiff, and by Mr. Ayre, of Hull, for the defendants. His Honour decided between them.

COURT OF BANKRUPTCY, LINCOLN'S INN, JULY 18.—(BEFORE MR. REGISTRAR PEPY'S.)—RE MAGNUS.—The debtor, described as a slate merchant, of Buckingham Palace-road, Pimlico, recently petitioned the court, under the arrangement clauses of the new Act, with debts stated to amount to £35,070, and Mr. Farran, manager of the Valentia Slate Company, had been appointed to act as receiver. The assets are said to be of considerable value. Mr. Brough now applied, pursuant to notice of motion, for an enlargement of an injunction, granted on a previous occasion, staying proceedings by creditors, until further order of the court. His Honour granted the application. Injunction extended accordingly.

Our Office Table.

THE ROYAL ARCHITECTURAL MUSEUM.—The Council of the Royal Architectural Museum are anxious to form a small library at the Museum for the use of the art-students and workmen studying there. They have, therefore, issued a list of the works most desired, with the hope that friends will help them, either by subscribing money for the purchase of the books, or lending or presenting new or second-hand copies. We are also requested by the Council to remind members that the museum is now open free to them on the evenings of Tuesday, Thursday, and Saturday, from 7 till 9.30 (the vacation months of August and September excepted), but as the arrangement entails considerable expense in lighting, &c., its continuance will depend on the numbers attending.

THE SERPENTINE.—A contract was signed on Friday last by which, in consideration of an additional sum of £5000, the contractor binds himself to remove the whole of the mud from the bed of the Serpentine. This will, however, leave the Serpentine much too deep for the safety of bathers, but it would cost, it is said, no less than £28,000 to fill it up to a safe depth with gravel, or any other acceptable substitute for the mud which will be removed

New Process of Casting Metals.—On Saturday a number of gentlemen met at the works of the Lancashire Engineering and Compression Casting Company, St. Helen's Junction, on the Manchester and Liverpool line of railway, to witness the new process of casting, in brass and iron, chased and embossed work of the most elaborate description. The process, which was here for the first time exhibited in England, is an American invention, and its utility was shown to consist in this—that any design, whether in high or low relief, chased on metal of any required pattern or shape, whether flat as a door plate or round as a vase, can be reproduced by castings from it *ad infinitum*, and each casting will show upon it all the sharpness and beauty of the original chasing. Moulds are made with a preparation of fine clay from the articles to be reproduced. The making of one of these moulds takes a person from five to ten minutes. The moulds have then to stand 24 hours to air dry, after which they are baked in a furnace for eight hours. These clay moulds, into which the metal is afterwards poured, are to all intents and purposes encaustic tiles. The clay moulds are placed in a box, and the air is extracted from them so as to form a vacuum, after which the molten metal is forced into them, and in this way, in ten minutes, a casting can be completed. When the casting is taken out, the design, however intricate, is found to be perfectly represented, with the exception of removing a slight surface of clay from it, which can be done in half an hour, and the article is then ready to be sent to the bronzer, instead of having to be kept in the chaser's hands. In this way an enormous amount of cost and labour on ornamental articles in metal is saved.

Steam Road-rolling at Poplar.—At the last meeting of the Poplar District Board of Works, Mr. R. Parker, the surveyor, brought up a special report on the use of Messrs. Aveling and Porter's steam road-roller, which has been at work in this district for nearly nine days to assist in re-coating macadamised roads. The weight of the roller is 15 tons, and it has four wheels or sections, which are so fixed as to cover a space of 6ft. in width. The maximum quantity of broken granite and Bombay stone used in one year throughout the district is 4723 tons, which would employ the roller 82½ days, or little more than three months in the year. The hire of the roller and two men for the period would cost £165. Supposing the roller to last ten years, the following figures show the comparative difference of the expense between the hire and purchase of it:—Cost of roller, £550; maintenance, £250—total, £800 in ten years. If hired 82½ days per annum, at £2 per day, for ten years, £1650; from which deduct two men's wages, 82½ days per annum, at 9s. per day, £371 5s.; net cost of hire, £1278 15s. This leaves a balance in favour of purchasing the roller of £478 15s. for ten years, or £47 17s. 6d. per annum, against which there are two things to be considered—viz., a building must be provided in which to keep the roller, and how are the men to be employed whilst the roller is not at work?

Discovery of a Roman Pavement in Gloucester.—Workmen employed in digging out the foundation for a house in the Commercial-road, Gloucester, came last week, at a depth of about five feet, upon a large portion of a beautiful tesselated pavement, with a bordering of unusually large gray and blue tesseræ of rather a coarse kind. Next to this was a very beautiful design in blue, white, and red tesseræ, of quarre-foil character, surrounded with a guilloche border; and a few feet from this another piece of tesseræ of geometrical design. As usual, intruders removed some portion of the material; the remainder has been secured. The colours were exceedingly fresh and vivid. A Roman key of elaborate workmanship was also found. The discoveries are of much interest, as proving the existence of Roman dwellings at least three hundred yards further southwest than any previous remains had suggested.

The Proposed Assistant-Surveyorship of Public Works.—The Commissioner [Mr. Ayrton] will leave his monument behind (says the *Saturday Review*) in the organisation of the office of which he has been the temporary tenant. After dispensing with Mr. Fergusson, suppressing the post held by Mr. Pennethorne, and giving Mr. Barry his *congé*, he has found that an Engineer officer hot from the Board of Trade and the War Office, and prompted by a glorified Clerk of the Works, was not sufficient to act the part of national architect, and he has accordingly, with the assent and consent of his economical masters, proposed to invest £700 a year in some tame architect of overlooked merit competent to do for the nation that which a Scott, a Barry, a Street, a Waterhouse, or a Burges could not be entrusted to perform. He appealed to the Institute of Architects to help him in his difficulty, and the Institute, of course, told him to look out for himself. So, with an ostentatious flourish of Spartan virtue, the new appointment has been thrown open to the competition of all or any architectural aspirants who will condescend to present themselves for examination before the Civil Service Commissioners. . . . "Design and superintend new buildings" and "spell properly"—Such are the qualifications of the man to whom Mr. Ayrton proposes for the future to entrust the national taste!

Regulations and Fees for Hoardings and Scaffolds in the City.—At a meeting of the City Commissioners of Sewers on Tuesday last, the Streets Committee, to whom it was referred to prepare the necessary license for hoardings and scaffolds, and the rules and regulations affecting the same, so as to accord with the opinion expressed by the Court of Queen's Bench on the powers of the City Commission of Sewers under the Act (see Building News for June 3), stated that they had had a report from the engineer and the solicitor, which they laid before the Court, with amended regulations, scale of fees, and form of license, and they recommended the adoption of the same. They further recommended that, in the event of any disagreement between the applicant for a license and the inspector of the district as to the length of time during which any hoarding or scaffolding should remain, the case may be referred to the Commissioners or to the Streets Committee, whichever might first meet, to determine the point in dispute. The recommendations were approved.

Chips.

The Otley New Mechanics' Hall, the foundation stone of which was laid on the 19th June, 1868, is now approaching completion. The stonemasons, joiners, and slaters, have all nearly completed their respective contracts, and little remains to be done save the plastering and painting. It is expected that the building will be completed and the new hall opened by November.

The south transept of Ludgershall Church, Hants, is being reseated. An Early English arch, in a most perfect state, has been discovered and opened out.

Mr. T. J. Horsley, a well-known local artist, died on Sunday week at Sunderland.

Wembdon Church, near Bridgwater, which was destroyed by fire a year or two since, has been rebuilt and opened for public worship. The tower and chancel were saved from destruction, and the expense of rebuilding the remainder has been £1250. The church has been increased in size, and will now accommodate 360 persons—about 100 more than formerly.

A new church is projected in the parish of S. Alkmund, Derby. A site has already been given.

Captain Arkwright, R.N., M.P., has promised £100 towards the restoration of Tideswell Church, Buxton, Derbyshire.

The erection of new schools for the parish of S. Luke, Leicester, is about to be commenced.

A public meeting has been held at Syston, Leicestershire, in furtherance of a scheme for the complete restoration of the parish church. The total cost is estimated at £1000.

At a special meeting of the Retford Highway Board, on Friday last, a committee reported that they had found Mr. Scott, the surveyor, deficient in his accounts to the amount of £227. Scott, who was present, fully admitted his defalcations.

A new schoolroom has just been opened at South Hykeham, Lincolnshire. It has been built from designs by Messrs. Drury and Mortimer, Lincoln, and is of red brick, with stone dressings. Ventilation is provided for by means of patent ridge tiles.

Mr. T. O. Barlow, the engraver, has just completed a portrait of Mr. John Fowler, engineer, from the painting exhibited by Mr. Millais at last year's exhibition of the Academy.

Tenders are invited for the enlargement and improvement of the School House Bridge, at Ashbourne, Derbyshire. Mr. G. Bridgart, the county surveyor, has prepared the plans and specifications.

A local paper says it is reported that a well-known surveyor of Deptford has offered to perform the duties now undertaken by Mr. Smith and Mr. Heward, engineer and surveyor, and road surveyor respectively, to the Greenwich District Board of Works, at about one-half the amount at present paid in the shape of salaries.

The Penzance Dispensary is to be converted into an infirmary. It has been determined to purchase the old poorhouse at S. Clare for that purpose.

During the last year, considerable additions have been made to the Swansea Hospital, the accommodation for in-patients having been increased by 40 beds. The erection of salt water baths for the hospital is contemplated.

The foundation stone of the new college buildings at Eastbourne will be laid on the 30th inst. by Lady Edward Cavendish.

A new Wesleyan chapel was opened at Ridgeway, Dorsetshire, on Wednesday week. The chapel will seat 170 or 180, and has been built by Messrs. Otter and Spicer, from a design by the Rev. A. Puddicombe, who acted as honorary architect.

Longfleet Church, Dorsetshire, is being re-seated.

A new Independent chapel was opened at Brompton Ralph, Devonshire, on Wednesday last.

The chancel of the parish church of Bedfield, Framlingham, was re-opened on Friday last, after having been thoroughly restored.

The trustees of the Sekforde Charity, have instructed Mr. Robert Reid, of London, to value the portion of the estate about to be taken by the Middlesex magistrates for enlarging the House of Detention at Clerkenwell.

Timber Trade Review.

The sale by auction, yesterday, at the Baltic Saleroom, Threadneedle-street, comprised the following lots. Holders of Prussian timber will be fortunate in obtaining high prices, the declaration of war having closed Prussian ports. Hull, Grimsby, and Hartlepool will be severe sufferers in consequence:—

500 Loads Dantzig and Memel fir timber.
150 ,, Quebec red and yellow pine.
400 ,, Halifax birch.
150 ,, Quebec walnut.
150 ,, Swedish and Norway balks.
100 Memel wainscot logs.
450 Dantzig deck deals.
22,000 Quebec yellow pine deals, &c.
23,000 Lowerport spruce.
16,000 Riga white.
12,000 Skonvick and Ljusne
10,000 Gefle, Hudekswall and Sundewall.
10,000 Gothenburg and Uddevalla.
55,000 Dram, Christiana, and Vefsen.
40,000 Prepared flooring boards.
250 Fathoms lathwood.

		£ s.		£ s.
Archangel lath wood	per cub. fthm.	4 0		
Bjorneborg 1st yellow	per Petg. std.	9 15	to	10 0
Do. 2nd do.		8 10	,,	9 0
		s. d.		s. d.
Christiana spars 4 to 6in.	per foot run	3 4	,,	5 8
Do. under 4in.		3 8		
Do. poles 16 to 22ft.	each	0 7		
		£ s.		
Do. 1st yellow	per 120 12 2½ × 6½	7 15		
Do 2nd do.		7 0		
Do. 3rd do.		6 10	,,	6 15
Do. 3rd white		5 15	,,	6 0
Dantzig crown deck deals	per 40ft.	Bought in.		
Do. 2nd crown do.		Do.		
		£ s.		£ s.
Do. straight oak	per load	4 15		
Do. lathwood	per cub. fathm.	5 5		
		s. d.		s. d.
Do. common middling timber	per load.	54 0	to	56 0
Do. good middling		56 0		
		£ s.		£ s.
Dram 2nd yellow	per 120 12 2½ × 6½	7 0		
Do. 3rd do,		6 10	,,	7 0
Do. 2nd white		5 15		
Do. 3rd do.		5 5		
Gothenburg 3rd yellow	per Petg. std.	8 15		
Gefle 3rd yellow		10 0	,,	10 15
Holmsund 3rd yellow		9 10		
Hudekswall 2nd yellow		9 0	,,	9 15
Do. 3rd do.		8 10	,,	8 15
Ljusne yellow		8 5	,,	9 0
Monsteras lathwood	per cub. fathm.	2 10	,,	3 5
		s. d.		s. d.
Memel 2nd middling timber	per load	61 0	,,	65 0
Do. crown wainscot logs	per 18ft. cube	37 6	,,	40 0
		£ s.		£ s.
Porsground 3rd yellow	per 120 12 2½ × 6½	6 10		
Petersburg lathwood	per cub. fathm.	5 15	,,	7 0
Quebec 1st floated yellow pine	per Petg. std.	14 15	,,	16 0
Do. 1st dry floated		17 0		
Do. 2nd floated		12 0		
Do. 2nd dry floated		12 10		
Do. 2nd bright		13 5		
		s. d.		s. d.
Do. black walnut	per load	2 9	,,	2 10
Do. birch		60 0		
Do. yellow pine		70 0		
Do. red pine		64 0	,,	70 0
		£ s.		£ s.
Riga crown white	per Ptg. std.	8 10	,,	8 15
Do. half crown do.		8 0		
Swartwick 3rd yellow		9 10		
		s. d.		
Skellefted yellow balks	per load	30 0		
		£ s.		£. s.
Skonvick 1st and 2nd yellow	per Ptg. std.	10 10	,,	11 0
Do. 3rd do.		8 15	,,	9 15
St. John's unsorted spruce	per 120 12 3 × 9	12 0	,,	14 0
Soderham 3rd yellow	per Petg. std.	9 15		
		s. d.		
Savannah pitch pine	per load	70 0		
Skein balks				
		£ s.		£ s.
Uddevalla 3rd yellow	per Petg. std.	7 0	,,	8 10
Vefsen 1st and 2nd yellow		8 10		
Do. 3rd do.		8 0		
Do. 1st and 2nd white		8 0		
Do. 3rd white		7 10		
Wifsta Wharf 3rd yellow		9 15		

THE BUILDING NEWS.

LONDON, FRIDAY, JULY 29, 1870.

ROCK ASPHALTE PAVING AND TAR PAVING.

IMPROVEMENTS applicable to the vast extent of our common roads need none of the usual common-places about the necessity for facilitated communication to recommend them. The metropolis annually pays nearly a million for the extension and maintenance of its streets and roads, though everyone with lungs to suffer from the dust they create, or with ears for the fearful rattling of the carts and horses' hoofs on the frequented streets, or possessing any feeling for the sufferings of the animals dragging loads over the loose stones of the 200,000 miles of English macadamised roads, must see that there is room for many improvements in our common roads.

There is just now much talk about asphalte paving as a means of avoiding some of the miseries and expense we have to bear. Professor Tyndall's rather sensational revelations about the amount and quality of the dust in London air have lately directed the somewhat evanescent and capricious energies of popular attention to the subject; and it is marvellous what an amount of futile gabble can be heard about the use of asphalte. A late number of the well-known medical periodical, the *Lancet*, under the heading of "London Dust," alludes to the injurious action on "children and the ailing" of the fine particles thrown off our roads, and describes the losses dust causes to furniture, clothing, and in dwelling-houses generally by its presence. It is notorious that the Regent-street shopkeepers have their goods injured by dust to the extent of from £30 to £300 annually. The remarks of the medical periodical are necessarily of weight, as bearing on the contamination of the air we breathe; the remedy proposed—that of the adoption of asphalte pavement—is more open to question. A long letter to the *Scotsman* from Mr. William Chambers, the late Provost of Edinburgh, strongly advocates the same material; and generally, as we have said, there is much talk on the subject. We venture, however, to think that, except, possibly, on some of the narrow streets of the City, on many of which, in fact, there are still existing fossil specimens of wooden pavements—we do not think that asphalte paving, for streets at any rate, has, to use a French phrase, much future before it in London. At the same time, we are glad to notice, that it is being rather extensively laid down in Holborn; and that, as we reported last week, it is to be tried in the Poultry and Cheapside.

Let us first see what this proposed material for our roads really is. The partial success in Paris of the substance forms the chief *point d'appui* of its advocates; and it has there been found that the best material is the hard limestone rock found at the Val de Travers, Neufchatel, Switzerland. It contains, equally diffused throughout its structure, from 11 to 12 per cent. of bitumen. This material is ground to powder, which, before being put to use, is heated in a revolving cauldron. The powder, thereby softened, is spread evenly on a concrete bed, and then rolled down by steam or other rollers. In Paris it has also been stamped with warm stampers; and this is the plan now being carried out in Holborn. In cooling it contracts, and assumes its original hardness, so that within a couple of hours it is so hard that carriages can run over it. The asphalte surface is about 2in. or 3in. in depth, so that the bed of concrete has to be thick to prevent the covering bending under the traffic. It is undoubtedly very smooth and easy for the passage of wheels, is almost noiseless, and is free from dust. In Paris it has even been calculated that the smoothness of the streets thus laid causes an annual saving of nearly three-quarters of a million of pounds in wear and tear of carriages and horses; but the bases of this estimate—for obvious reasons difficult to get at—seem to us of rather doubtful stability. In London, a favourable instance as regards absence of noise is undoubtedly the asphalte pavement of Threadneedle-street; and only lately upwards of 100 owners and occupiers of Old Broad-street petitioned the City Commissioners of Sewers to lay their street with the material. We have here an instance of the use of asphalte for carriage roads; and for what seems to us its more legitimate employment as a foot pavement, one encouraging precedent is to be found in Trafalgar-square, where a smooth even surface, very pleasant to the feet, has shown for years scarcely any wear or deterioration. The asphalte there laid down is that of the "Pyrimont" Seyssel Asphalte Company, the merits of which have been noticed by us on more than one occasion.

This is the pleasant side of the medal; we now come to the obverse. One main objection is the great expense. The price, from 18s. to 20s. per square yard, or rather more than that of the best London paving setts, is a serious item; and as the use of the material is a monopoly in the hands of a French Company, this cost is liable to be raised with any increased demand. Now according to a work* we have lately noticed, it is estimated that within a radius of only 12 miles from Charing-cross there are not less than 40,000,000 square yards of macadamised roadway alone. If it be supposed for a moment that asphalte can compete with macadam, we should be glad to know where the £40,000,000 are to come from to lay all this area with asphalte.

Even this expense would have to be increased if, to aid the thin 2in. or 3in. coating to withstand the traffic, the asphalte were laid, as it should be, on a solid bed of concrete. At this rate it would cost more than paving, which, in setts 9in. deep by 4in. wide, costs about 18s. per square yard when laid on a coarse gravel bed.

The want of foothold for horses on asphalte pavement is so great that it could not be thought of for gradients. In Paris, as we have ourselves noticed, the horses can often be observed to struggle very painfully on it for foothold, as it gets greasy and almost as slippery as ice in some states of the weather. This fact can also be often proved on the short length in the City of London. In any case, its durability under the heavy London traffic has also to be proved; and this can only be done in the course of years. Even in Paris, instances of its taking bends, and a wavy surface under heavy traffic can be seen. Passing through Threadneedle-street the other day, we noticed that this tendency to a wavy surface was already shewing itself, though the asphalte has not, we believe, been laid down there longer than 18 months.

Another objection in London is the difficulty of getting at the gas and water mains, and underground telegraphic wires, for repairing purposes. This difficulty would not be felt so much in the French capital, where centralised administration has long extinguished the rivalries of gas, water, and telegraph companies—the mortal enemies of non-steam-rolled macadams. One remark we may also add, though we do not cite it against asphalte when properly laid and treated. It is noticeable that, possibly on account of some reason connected with differences of thermal expansion and contraction, asphalte foot pavements often open across at regular intervals. This can be seen in many instances; as, for example, on Charing Cross Bridge, and an old pavement leading out of Spring Gardens into St. James' Park. However, in all these matters, the great question is expense of first outlay and maintenance. As capital at five per cent doubles itself in about 14 years, we see one reason why first cost exercises such dominion over sublunary affairs.

A cognate subject is that of tar pavement, of which an account was lately given by Mr. Methven, of Bury S. Edmunds. The conditions of cost are evidently different; but the smell, often strong when fresh, is an objection. It is made of the cinder dirt from gasworks, of shingle, or a mixture of both. As a preparation for foot pavements, the material is burnt in heaps like ballast, and when hot is mixed on the ground with hot tar. A fire of coke is covered with cinder dirt or shingle. When this layer is hot, another is added and so on in succession, until a large enough heap is made. The tar is boiled in an iron copper, and when heated, mixed with the hot material from the heap, in quantities of two bushels at a time, in about the proportion of one gallon to every bushel of cinder dirt, and slightly less than a gallon for the gravel. It is turned over and over with the shovel until every portion gets a covering of tar. The whole is passed through a sieve and put in heaps till required. Before the pavement is laid, an edging is provided about two inches thick, and projecting two inches above the surface of the ground to be covered, which should be made tolerably even, and near the kerb, be well trodden on or rammed. In laying, the rough stuff is put down first, and rolled until tolerably firm; then the second quantity is put on, and then the third; and when the whole has been levelled, a little of the finest material is sifted on, and a little fine white shingle or Derbyshire spar sprinkled on the top. The whole must be well rolled. The best roller is a water ballast roller, which is used at first without ballast, and wetted to prevent adhesion of the material. When the pavement is slightly consolidated the full weight should be applied. For heavy cart traffic the hard material should be shingle. Both descriptions of pavement are laid best and most easily in warm weather, and should be rolled when the sun has warmed them well. Tar pavement can be laid at 1s. 4d. per square yard; or, in some cases, for even less. This last fact gives the use of tar a much greater importance in our eyes than the costly Swiss asphalte. Many road reformers look with hope upon the use in this way of the refuse of our gas works, possibly mingled with a quantum of concrete. The description we have given of tar paving applies to foot pavements, which are evidently under very different conditions of wear and tear to horse roads. Cart roads have thus also been made of tar binding together stone metalling of about the size of walnuts, without any mixture of cinder dust. Up to the present, however, no composition has been found to beat the common broken stone road, and when the public fully understand the great economy and advantages of steam rolling them, as in Paris, we do not think that any road in this great steam-using country will be made and maintained without the use of the steam road-roller.

THE DECORATIONS OF THE SMALLER REFRESHMENT ROOMS AT THE SOUTH KENSINGTON MUSEUM.

ON the left hand of the Central Refreshment Room which we have described, is a much smaller dining room, the decoration of which was wisely entrusted by the Department to Messrs. Morris, Marshall, Faulkener, and Co. At the hands of this firm of decorative artists we expect much, and need not be disappointed in this instance. The room is what every decorated room should be, quiet and reposeful; one is not distracted by glitter in every direction. The work possesses that essential quality of tone to which we referred in our last article on this subject.

We are not, however, disposed to admire indiscriminately all that even Messrs. Morris choose to set before us. There is a certain wilfulness in all they do, and they set one's teeth on edge occasionally, as if with *malice*

---

* "On the Economy of Road Maintenance and Horse Draught through Steam Road-rolling, &c." By F. A. Paget, C.E., &c. London: Spon, Charing-cross. 1870.

prepense, for the sake of asserting their independence, and letting us know that they neither are, nor intend to be, exactly as other men. What we mean will become evident as we proceed with our critical description of this work.

The flooring has not formed part of the scheme, but simply corresponds with that of the rest of the Museum in being simple and unpretending tile work, such as we described in our last notice. The dado, which is a high one, contains some mouldings of a Queen Anne type, the adoption of which we look upon as one of the freaks of this firm. Upon this dado is an upper tier of panels, which has been made one of the most interesting features of the room. The whole of the woodwork here enumerated, except these panels, has been painted a deep, quiet green, such as would be compounded of black and yellow pigments. The panels are highly decorated, some few with figures executed in a high style of art, and the rest with flowers, leaves, and fruit upon a gilt ground. There seems but little order in the arrangement of the few figure panels among the rest, and their proportion would not exceed one in six. The principal part of the wall above this dado, with its range of decorated panels, is covered with a bold and rich ornament in moulded plaster work, representing branches of olive trees. The ground, as well as the ornament, is a refined, subdued green, but the ground slightly darker, so as to throw out the ornament in relief, and the central fibre and outer edge of the leaves seem to have had some of the colour wiped off, and thus shows the white ground beneath through the paint. The general effect is also enriched by dark berries, and flowers coloured pink with a white centre. This description would, however, hardly prepare the reader for the exquisite harmony that has been produced by this combination of greens with but slight contrast and relief. This portion of the decoration is, to our minds, simply perfect, and by far the most successful portion of the decorative treatment of this apartment. The frieze above is more open to criticism. It forms, in raised plasterwork, a sort of bold fret, enclosing oblong panels, in which disport greyhounds and hares of the most comic description. They are ungainly and clumsy, and we are quite at a loss to account for their introduction. The rich and deeper colouring of this frieze is, however, very effective, and the manner in which the bold egg and tongue moulding which crowns it is treated, is an instance of the method in which every touch is made to tell by true artists. The eggs are gilt and the hollows in which they lie painted vermillion, and the value given to the gold and its surroundings by contrast is great. A portion of the ceiling round the room drops some inches below the rest, and is intersected by the soffits of bracket beams, which form part of the construction of the floor above. The whole of the ceiling is white, decorated with quaint and lightly designed ornaments in a subdued yellow ochre tint. It consists of a series of circular, sunlike rayed patterns, the lozenge-shaped spaces between them filled with conventional foliage. The soffits of the beams in the outer part are a dark brown, approaching black, studded with most delicate white flowers in triple rows on each bracket. This is another pleasing and refined touch, which tells well. Altogether, we congratulate Messrs. Morris on the result, which we consider highly successful, in spite of the hare hunt, which would disgrace a nursery, and be hooted at by its infant occupants.

Four sun-lights seem to have been stuck through the ceiling since Messrs. Morris left it, and they interfere with and destroy some of the patterns of their decoration, and have blackened with smoke a further portion, which, of course, is greatly to be regretted.

We ought not to omit, as an integral part in the general scheme of the decoration of this aparment, the treatment of the windows, which are three in number, of two lights each, lofty and square-headed. A band with figures, one to each light, is carried in one line across the whole. There is but one figure of a lady in each, tending flowers or playing music, or occupied in some other simple way; the figures are in pearly subdued white, with gentle yellowish-diapered draperies, and, of course, golden hair, and the backgrounds of the panels in slightly deeper tints, as brown, blue, &c.; the rest of the windows are filled with circles of glass with delicate ornaments in brown touched with yellow, and a simple bordering runs round each light. Thus the windows are not obtrusive, and fall in with the rest of the work of decoration harmoniously.

The other apartment, which is known as the "Grill Room," from the cooking purpose to which it is devoted, has had its decoration entrusted to E. J. Poynter, Esq., A.R.A. We apprehend that Mr. Poynter's increasing fame as an artist has interfered with the execution of this commission, for the room has remained in the same unfinished condition in which it now is for a long period. It is impossible to judge of the effect intended to be realised as yet, and the principal object of which it can boast is a splendid cooking-range for grilling chops. We wonder whether Mr. Poynter can lay claim to its design, which seems from the hands of a first-rate Gothic architect rather than those of a painter. At any rate it is an admirable example of metal work, in which cast and wrought iron are used and decorated as each ought to be, and constructive requirements and artistic effect have been studied together. The treatment of the walling is peculiar and original, and promises to be effective. It is covered with a framework of panelling in brown, hard, woodwork, and the panels are to be, and already have been partially, filled with slabs of porcelain, with white ground and blue ornament, in imitation of old china. Some of the larger panels are of a great size, and pictures in this monochrome manner have been executed for them, and all this painting and pattern drawing upon the porcelain, we are told, is by students of the Department. The only adverse criticism that we have to make is that perspective and distances seem too much indulged in, especially in the more ambitious and larger panels. All such wall decorations, and certainly even more rigidly such as these in monochrome, should be kept as decorative work in one plane. Above this panel work is a frieze of stamped plaster, a series of peacocks with fully extended tails, and fruit shrubs, which we should much like to see coloured by the pencil, or at least under the direction, of Mr. Poynter himself. The ceiling has been arranged after the insertion of the gas sunburners, and they accordingly fill each a single panel in a general arrangement, without spoiling it, unless by their blackening process hereafter, but which, we hope, has also been obviated. Some still more delicate plaster-cast ornaments surround this ceiling, and afford ample scope for treatment in colours.

Another part of the Museum owes its resplendent lines to Mr. Owen Jones, who has so well studied Oriental and Moorish decorations, and Mr. W. B. Scott is engaged upon a series of designs for glass painting for the windows of the Ceramic Gallery, while numerous well-known names are engaged upon designs for panels of Mosaic work. To these we intend to devote our attention upon a future occasion, as we take the highest interest in these attempts after a better style of decoration than has of late years prevailed.

◆

WROUGHT IRON CRANES.—II.

In our last article on this subject, the solid-sided or plate-web crane was the example selected for illustration and description. Its merits were pointed out, and its disadvantages also investigated. Before proceeding to determine the nature and extent of the strains that act upon a crane, we will briefly notice the constructive difference that exists between the open and the solid web form. To avoid needless repetition, and not to introduce more cuts than are necessary, we will assume that the duty required of the crane is sufficiently severe to necessitate that it should be of the double web type—in fact, an open-sided tubular crane. It will be at once seen that while this form possesses all the advantages with respect to stiffness that is given by the solid-sided form it is also free from its disadvantages. There is no difficulty in examining every part of it, and painting and repairing it when necessary. In Fig. 1 is represented the elevation of a lattice bent crane with a double series of triangles in the web. Frequently the crane has a web of the Warren type, in which there is but one system or series of triangles, but the arrangement of the number of series depends altogether upon the size of the crane, and especially of its depth. The deeper the web, the greater must be the number of intersections of the bars, or the greater must be the amount of stiffness given to them, either by increasing the sectional area of metal in them, or adopting a form of section adapted to ensure the requisite rigidity. It will be at once apparent that the greater the number of the crossings of the bars the less becomes the actual length of any unsupported bar. Every intersection of two bars, supposing it to occur at the middle of their respective lengths, virtually reduces those lengths one-half, and the stiffness of the bars is thus nearly doubled, for while the original strain remains the same, the tendency of the bars to deflect is very considerably diminished. This was one of the causes that speedily proved how deficient the Warren system was in those points when girders of large span were proposed to be constructed on that principle. It was soon discovered that it was absolutely impossible to construct a deep girder with only one series of triangles. The amount of material that it was necessary to introduce in order to afford the proper degree of stiffness to the bars was very much in excess of that which would be required in a solid-sided or plate girder. It must be borne in mind that the superior economy of the open or lattice type of girder over that of the plate system rests in the web, and in the web alone. The flanges or horizontal members of both systems are nearly identical. If, in designing a large girder on the lattice principle, the saving is not effected in the web, it cannot be obtained in any other part.

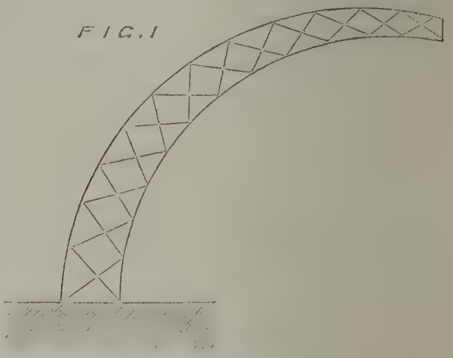


FIG. 1

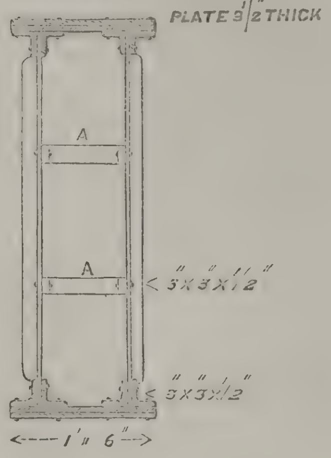
The section of the crane shown in elevation in Fig. 1 is represented in Fig. 2, and, with the exception of the web or sides, does not differ materially from that given in our last article. Directly the horizontality of the flanges is departed from the strains upon the bracing or bars connecting the upper and lower flanges, and constituting the web, become very complicated, and it is by no means easy to ascertain without some slight consideration, which of them act as struts and which as ties. When we proceed to analyse the strains upon a bent crane, and the manner in which each separate bar is affected by the load, it will be demonstrated that those which slope towards the lower or fixed extremity of the crane are subject to compressive strains, and, *per contra*, the others to those of a tensile description. But this is not a universal rule, for a great deal depends upon the radius of the upper and lower flanges, the depth of the web, and the angle of inclination of the bars. This angle is continually changing, which is the great impediment to the use of mathematical calculation for these examples of construction, In those instances where the flanges, both upper and lower, are horizontal and parallel to one another, the angle of all the diagonal bars is constant, and the calculation of the nature and amount of the strains may be effected either by geometrical diagrams, or by simple and readily deducible formulæ. But directly either or both of the flanges assumes a curvilinear outline, this simplicity of calculation is at once lost. The ordinary formulæ are no longer applicable, and those that would theoretically apply to each particular case in question are so exceedingly troublesome, complicated, and uncertain, as to be practically useless. It is not too much to assert that to attempt to employ algebraical or mathematical equations and formulæ to some of the examples of girder construction would be to attempt a practical absurdity. Recourse is therefore had to the graphical method, and by means of a diagram of strains the proportons of the several parts can be accurately determined. At present we are not concerned with this part of the subject, which will be fully discussed in a subsequent article.

A reference to Fig. 2 will show that a plain bar section will not answer for the compressive bars in the web of a bent crane. This is owing to the fact that a plain rectangular bar has little or no lateral stiffness. It is true that when occupying the position of one of the diagonals in the web of a girder designed on the lattice principle, it is stiffened to some extent by the intersections with the other bars. But this is not sufficient, and it becomes necessary to adopt a form of section that by virtue of its own shape shall possess some degree of inherent stiffness and rigidity. Independently of this reason there is another. It is that although the intersections of the bars do contribute to the stiffening of the web of the girder, yet they are not supposed to actually prevent the bar from deflecting. There is little doubt that they do in reality do so, but it must not be taken into account when proportioning the bars, because it is always assumed that there is no extra strain brought upon the respective bars by their being rivetted or bolted to one another. It is at the same time manifest that if they were prevented from deflecting, in consequence of the points of intersection, there would be a considerable transverse strain induced upon them. This strain, which would increase with the length of the bar, would altogether vitiate the whole principles of girder construction, as we have already frequently explained in our columns.

The form selected for the compression bars in Fig. 2 is that of angle iron, but there are several other forms equally suitable. Of these, tee or channel iron are to be preferred, but they all yield to angle iron in simplicity and facility for attachment. Moreover, the last description of section is that most readily procurable in the market. It can always be obtained of the usual scantlings at a very moderate price per ton, whereas some of the other sections are only to be obtained by special order, thus entailing a long delay, and sometimes are not to be had at all. There is no greater mistake made than to design a structure with a quantity of impossible-shaped material in it. As a rule, always select those forms, sections, and sizes of iron that are the most readily obtained, and at the most moderate cost. It is not only the shape of the iron that is of importance, but the dimensions. When bars beyond a certain length in one piece are wanted, or plates containing more than a certain maximum superficial area, there is an extra price per ton charged. Thus, a narrow plate of about 12in. broad can be procured at the ordinary market prices in a considerably longer single length than one of 24 or 30in. in length.

At the time of constructing the Britannia Tubular Bridge over the Menai Straits, there was the greatest difficulty experienced in obtaining plates 12ft. in length. Since that time our iron manufacture has made a great deal of progress, but still long plates are very expensive. This is owing to a combination of many circumstances. In the first place, the larger the plate, the greater the trouble and expense of handling and transporting it from one place to another. Secondly, the difficulty of rolling a plate or bar that shall be homogeneous in consistency increases enormously in proportion to an increase in the size ; and, thirdly, larger and more expensive rolling machinery is necessary than for plates and bars of the ordinary dimensions. Besides stiffening the bars in the web of the bent crane in the plane of the elevation of the crane, they also require some bracing in a plane at right angles to the face of the web. The opposite bars have to be braced together transversely, as shown in Fig. 2. This is usually effected by introducing small pieces of bar or angle iron, and rivetting them (see A A, in Fig 2) to the diagonals at their intersections with each other.

FIG. 2



In large examples, the opposite diagonals are united, not merely by horizontal pieces of bar, but by a regular system of cross bracing, so as, in fact, to convert the whole couple of diagonals into a small braced girder of itself. Wherever the depth of the girder is small, this is not needed, but the plan shown in Fig. 2 will afford all the security required.

We must reserve for the next article on the subject the investigations into the strains upon these braced specimens of construction.

◆

SUNDRY CASTLES OR CRENELLATED MANSIONS IN SHROPSHIRE.

We resume our remarks (see preceding article, No. 807), on castles, &c., in Shropshire.

Ludlow Castle on its lordly site, is too well known for us to dwell upon it in this notice, which we have undertaken with the view of calling attention to the numerous and interesting specimens of smaller castellated mansions with which this border county of Shropshire abounds. Some interesting drawings are extant which were made by one Thomas Driveley, who accompanied Henry, first Duke of Beaufort in a tour through Wales, and of which an account is given in a manuscript entitled "Cambra Britannica," preserved in the Library at Badminton. This chronicler speaks of having attended service in "Prince Arthur's Chappel" in the Castle, and speaks of "The Castell Hall" as very "faire," and of "the Council Chamber where ye judges dine," of "ye great hall and ye room below stairs, and ye council chamber, ye President's bedchamber, with a withdrawing room for privacy ;" and says that "above stairs is a large dining-room famous for its roof of large tymbers, near which is Prince Arthur's bedchamber, said to have a double heart, according to ye device seen therein painted and gilded against the wainscot, and that next above stair to be considered is ye Lord President's Lady's room, and her bedchamber, furnished by his Majesty with lemon-coloured damask." By this extract it will appear that this important structure contained more than the usual number of stories, but it refers to buildings of several successive dates.

The great Keep Tower was built by Roger de Lacy soon after the Norman Conquest. The sketches referred to above show the domestic buildings added to it by Sir Henry Sidney. The chapel, which has been noticed, is perhaps the most interesting portion of the whole that has been preserved. It consists of a circular tower of Late Norman work, with an entrance doorway of three recessed orders, with nook shafts in the jambs, and richly decorated semi-circular arches. A string-course divides the exterior of the tower into two unequal stages. The upper one, which is the loftier, has a few plain Norman windows with a considerable height of plain walling above them, and is finished with battlements. There is a rich chancel arch within, similar in character to the entrance doorway already described.

Of *Wattlesborough Castle*, all that remains is a square Norman Keep Tower with wide flat buttresses at each angle. This fragment stands in the park of Sir Baldwin Leighton, thedirect descendant of its Norman lords.

Clun Castle, described in an inquest dated 1272, in the muniment room at Powis Castle as "a certain small castle competently built," having without it "a Bailey, enclosed with a ditch with a certain gate begun in the wall, and in the same Bailey these houses, to wit, a grange, and a stable, and a bakehouse." Fragments of a similar square Norman Keep to that of Wattlesborough, and portion of outer round towers and curtain walls, still exist. The Fitz Alans of Clun and Oswestry held considerable grants of land of the Crown for military service, and The Honour of Clun is one of the most extensive in Shropshire ; its Forest in the reign of Henry VIII. contained 1700 acres.

Another square Keep Tower only remains now to mark the somewhat singular site of *Hopton Castle*, in a valley surrounded by hills.

The site of *Bishop's Castle*, formerly called Lydbury Castle, is now occupied by an hotel with a bowling-green within the old walls of the keep; but in the British Museum is a sketch showing it to have been a structure of some dignity and importance. An outer court is, indeed, surrounded by a wall of no great strength, and with but few turrets of defence, and the gateway and some buildings within the court of almost ordinary domestic character ; but the inner castle is represented as bristling with towers. A gateway, flanked by circular turrets and high curtain walls, with large circular towers at the angles, seems to enclose a massive square keep, with pronounced corner square turrets, the whole profusely battlemented. It was built by a Bishop of Hereford to guard the great episcopal manor of Lydbury from the Welsh. The manor of Lydbury, 18,000 acres, was given to the Church of Hereford by one Egwen Shakelead, in return for a miraculous cure of palsy at the shrine of S. Ethelbert, before the Norman Conquest. In 1530 Leland visited this castle, and says, "Bishop's Castle is well menteined on a slope of rocke, not very hy."

Whittington Castle, held with Alberbury by the Fitz Warrenes, of the Crown, according to a sketch taken in 1760, had five round towers, capped by corbelled parapets, crenellated with battlements projecting from and defending the walls, and a moat surrounding it. At present a fine gate-house, with the entrance archway flanked by circular towers, is all that remains of this stronghold, which was built by Fulke FitzWarine, although a previous castle occupied the same site as early as 843. The same family for nine generations, each bearing the name of Fulke, continued its possessors until the death of the last Fulke FitzWarine, in 1615.

The remains of *Red Castle* are one lofty tower and some other smaller ones, picturesquely situated on a high rock in the Park at Hawkstone. A well shaft was carried through every story, with openings on each floor, that a bucket might be stopped whenever wanted. The castle was first called Radcliffe, in consequence of having been built upon a rock of red stone. It was built by Henry de Aldithele, in the reign of Henry III.

Acton Burnell was another "goodly manor-place and castel," four miles from Shrewsbury. It was probably erected before 1292, in the reign of Edward the First, by his tutor, Robert Brunell, then Bishop of Bath and Wells, Lord Treasurer and Lord Chancellor, under a licence to crenellate his new house, and cut timber in the King's forest for the building. Its style is considerably later than that of Stokesay, which we have minutely described. Its general form is a parallelogram, about 95ft. by 60, with a square tower at each angle. It had three stories, the hall occupying the two upper ones on the eastern side. It contains three large transomed windows of two lights, with spherical triangles in the heads, and seats in the jambs below.

The above list and particulars of the ancient and interesting crenellated manor-houses of Shropshire we have appended to our description of the better-preserved ones of Stokesay and Broncroft Castle, and are indebted for them to an anonymous and scarce work entitled "The Castles and Old Mansions of Shropshire," published by Messrs. Leake and Evans, of Shrewsbury, but which we fear is now out of print. It is profusely illustrated with drawings by the anastatic process, better in intention than execution. We may, perhaps, on a future occasion seek the same guidance to the later but valuable examples of the timber-constructed mansions of more peaceful times in the same locality, and in taking leave of these castles quote the following remarks from the preface of the work we have consulted.

"The keep tower and the hall were the distinguishing features in the Norman castles; in the latter the family dined, while the vassals congregated round its central hearth during the day, and on its floor they slept at night. The earliest specimen of a baronial hall in any state of preservation in Shropshire is that of Stokesay Castle, which was in existence before 1290. In the 14th century, the dining-room had begun to supersede the hall; the necessity for a large number of dependents had ceased, in consequence of the establishment of independent traders and workmen. Serfs were no longer fed at their masters' tables, and the more tranquil state of the country when the Wars of the Roses had terminated rendered it no longer necessary to have a band of retainers on the spot, and guests were not accompanied by so many followers."

THEORY OF THE ARTS.

(*Continued from page* 4.)

THERE is a singular impression of unity pervading the civilisations of the ancient world that it is impossible to avoid being struck with. As Guizot, the great French historian, observes, they seem to have emanated from a single idea — a dominant principle which has determined the institutions, the creeds, and social developments of their several communities, resulting in a remarkable homogeneity and simplicity. In Egypt, India, and elsewhere in the East, the *theocratic* principle has predominated, reproducing itself in the customs and monuments of the people; elsewhere the democratic element has preponderated, as in all the republics of Asia Minor, Syria, Phœnicia, &c. In other cases, the domination of force or the military principle imposed itself upon society, its laws and arts. This unity of civilisation has produced different effects. In some cases, as in Greece, producing rapid development; in others, an unprogressive and stationary condition, as in Egypt and India. Further, this character of unity has been unmistakeably stamped upon the works of art of these early civilised nations; and it is to be remarked that so long as this principle of unity co-existed in the mental, moral, and physical conditions or activities of a country or people, so long was art capable of development; while a disturbed balance of these powers either quite upset that very mental process of embodiment or expression, or, ignoring the ends of art, made it dull, expressionless, and stationary. Now, during the declining years of the Roman Empire, these three great powers were entirely subjugated by the one dominant idea of conquest and mere physical force; and even during the preceding periods of regal and republican Rome, the balance of the three powers I have alluded to was seriously defective, the moral and intellectual elements being sadly deficient. Hence, as we have seen, their art was presumptuous, half deceptive—not as in Greece, real and truthful. The very manner Rome acquired her dominion, by the conquest of towns—the association of municipalities—rendered difficult any attempt to preserve unity or that social bond necessary to organise a great state. It was impossible even for the empire to hold long together elements so incoherent.

The dismemberment and fall of the Roman Empire, the inroads of barbarian tribes, the gradual extinction of Paganism, and the increasing infusion of the spirit of Christianity combined to re-create a new state of things—a new balance of thought and feeling—in short, a new humanity. Henceforward everything is conceived in a different spirit, because the moral and intellectual are no longer in antagonism with themselves or with the physical nature of man. The spiritual and material, or inner and outer faculties, are more reconciled, not in such hopeless confusion as they had been. The conflict of such various elements as now engaged mankind, various powers, principles, and ideas struggling and limiting each other, really produced a vastly different state of society, in Europe at least, to any that had preceded. These various forces in a continual struggle, theocratic, monarchical, democratic, necessarily create a modified condition of society without allowing either one or the other power to dominate, as in the ancient civilisations. This diversity of elements and sentiments is the distinguishing character of modern European civilisation, and is a notable characteristic of all middle-age art as distinguished from ancient. Thus Romanesque art was far more vigorous than either Greek or Roman; more diverse and rich in combination of forms, and more pliant in its uses. The secret of all beauty in ancient classical art was the *unity of idea* that conceived it, and the symbolic expression of its workmanship; while the diverse ideas and complex character of modern civilisation render it much more difficult to arrive at harmony or beauty. To endeavour to attain to the principles or method which will facilitate the process of this result is the object of the present essay. Various degrees and kinds of perfection must now be reached where formerly only *one* degree and kind, limited by the simple requirements and dominant idea of the age was attained.

Christianity gave a new impulse to the moral force of humanity. The various gods of heathenism were rejected; vicarious sacrifice repudiated; peace instead of victory proclaimed, and just those qualities and virtues became valued and extolled that before were contemptuously treated. The sensuous yielded to moral influence. Oriental and Roman licentiousness was gradually replaced by a moral power that began to make itself felt, and a religious zeal was engendered which became more earnest and real as the rottenness of Heathenism and the opposition of its adherents increased. Early Christian art was necessarily sepulchral, the Catacombs affording the chief recluse and resting-places for the martyrs of the new faith. The memorials of this sepulchral development indicate a simplicity of aim and moral power that exercised a marked influence upon early art. The very altar tombs of the martyrs became emblematic of Christian hope, and the sterner and sorrowful images of suffering were always avoided. Symbolism became a means of instruction, and Paganism necessarily supplied many of the symbols. After Christianity became the established religion, art of course assumed a more definite character, partaking, however, of Pagan traditions and ideas. Though painting and sculpture were looked upon with aversion by the early Church—so much so, that in Constantine's time portraits of Christ were rare; yet these arts were made to do service for the new faith. The ancient conceptions, however, were at first appropriated to the new service with a singular judiciousness, to avoid idolatrous tendencies. Yet with all the early simplicity and zeal displayed, the successive phases of the arts enable us to trace the stages of religious development and realisation with peculiar distinctness. Although a purer form of religion now occupied the human mind it was prone to run through the same stages of progress that marked preceding conceptions of religious thought. What was at first a spiritual conception is gradually, by a desire to attach too much reverence to it, converted into an object of idolatry. This was not to be wondered at, for the mind had not attained the power of analysis and perception to distinguish between the objective and subjective. Never before had the spiritual conception the power over mankind it had at this triumph of Christianity over materialistic ideas. Between Paganism and Judaism the new Faith struggled into existence by this intrinsic power of its own, and the very circumstances attendant its promulgation, the persecutions of the Christians, &c., prepared the mind for its acceptance still more at this early stage of the Church. As the Church increased in power and prosperity, this power decreased, till at last we find art allied so closely to religion as to be almost inseparable.

The tendency of the philosophy of the Middle Ages was to re-assert the old theological dominion at the expense of truth and liberty. Thus the philosophy of the Fathers was a blendid Supernaturalism and Rationalism. The two elements were often at variance, showing an unsettled state of thought, and that the period of reconciliation between the material and the spiritual had not arrived, and that the proper balance of the three powers, the physical, intellectual, and moral, had not been satisfactorily adjusted. The new power of a revelation became antagonistic to existing rationalism, and several attempts were made to reconcile the claims of both. Thus the supernaturalist system of St. Augustin found acceptance during the first centuries of the Church, during which period philosophy was subordinate to theology. A blind Realism prevailed, which was in time opposed to a more liberal thought, under the designation of Nominalism. These two opposing systems divided the Church for centuries. As the Church gained ascendancy and established a sort of ecclesiastical despotism, Realism attained exclusive dominion, and philosophy became more allied to theology, and were, indeed, so during the thirteenth and fourteenth centuries, when the arts of architecture, sculpture, and painting, reached their highest religious realisation.

The art of the Middle Ages is, indeed, a truthful reflex of the religious thought and feeling of the period. It was beautiful, grand, symbolic by virtue of the unity and supremacy of the conception that created it.

Whatever our estimate of that conception may be now, it was an approximation to a high moral and social standard, superior to any that had preceded it. Catholicism appropriated all that ancient philosophy had taught, and reo-rganised a social polity founded upon a monotheistic system which was destined ultimately to prepare for the advance of new elements of a definitive order. But beyond this it was powerless as a progressive system, it never having been able to associate itself with intellectual progress.

The æsthetic development of the Monotheistic system of the Middle Ages I must reserve for another paper.

G. H. G.

◆

NOTES FROM MANCHESTER.

(FROM OUR CORRESPONDENT.)

WHETHER the commercial prospects of Manchester are or are not improving, we are not adequately "posted" in the mysteries of the cotton manufacture to say. The iron trades, particularly those in connection with the production of locomotive engines, have been very brisk all the year ; and in some kinds of edifices, especially warehouses and small dwellings, there has been a good building trade. Possibly there would have been a brisker one but for the operations of the trades' unions. It is not encouraging to be told, as we were the other day, that even the iron girders used for the building of the new Royal Exchange in Market-street are being manufactured on and imported from the Continent. This edifice is now cornice high. We are not aware that any views of it have been published; and thus, while from such representations every one is well acquainted with Mr. Waterhouse's Town Hall going up (very slowly) in Albert-square, no one but its architects, Messrs. Mills and Murgatroyd, can say whether the architecture of the new Exchange for Manchester will be good, bad, or indifferent. It would be premature to at present venture upon any criticism of this important work beyond saying that, up to the present writing, it can hardly be considered as possessing a very monumental air. There seems a fatality about all our English Exchanges, whether royal or plebeian. We can only call to mind one,—the old Liverpool Exchange—that rises to the air of anything much nobler or more monumental than a row of shops. Harrison's original "Exchange" at Manchester was not, strictly speaking, an Exchange, being really little more than a news-room. As such it was, like all such edifices of his (witness the Lyceum in Liverpool, and the Portico in Mosley-street, Manchester), both monumental and dignified. The latter work, with Sir Charles Barry's Royal Institution, is doomed, we fear, to be swallowed up in the rage for building warehouses. Peradventure, the old Town Hall in King-street may share the same fate. The portico is a structure remarkable for the soundness of its masonry. We don't now-a-days insert in our buildings blocks of stone fourteen feet long ; but these may be seen in even the plinths of the Portico Library at Manchester.

While, however, we lament the impending destruction of such buildings (and, by-the-bye, insist they ought never to be taken down without the deposit in National or Municipal archives of accurate geometrical drawings), we are far from decrying the sound construction of the Brobdignagian warehouses rising everywhere in their place. These are almost invariably well-designed and soundly-built edifices. It is common enough in London to read of six children being burnt to death, merely because of a house on fire in the Waterloo-road, Lambeth ; but it is by no means a common thing to read, as we did a few weeks ago, of a warehouse being built in the very heart of Manchester without an architect, to the utter disfigurement of the good city, as any one may see who walks into York-street, and observes the vulgar-looking, proportionless pile whose falling cornice occasioned a terrible catastrophe and very remarkable inquest. Nearly opposite this ill-contrived affair is a large stone warehouse in course of erection by the Messrs. Clay, from the designs of Mr. Corson. It is at present too little advanced to admit of fuller description ; but one sees about it everywhere the pencil of the professional architect, especially in the quiet originality with which its details are treated. The style is Italian, with semi-circular headed openings set within spandrels of incised diapering.

Two stone-fronted warehouses are erecting in Portland-street ; one, nearly completed, with the frontispieces of its first floor windows crowned with a kind of panelled pendentive or groin ; and the other a very large building, being erected under the direction of Messrs. Clegg and Knowles, at the corners of Portland and Brook-streets. This building has been in hand for some time. It has a basement of great depth, carried through upwards of 20ft. of stiff clay, excavated with the aid of steam power, and under circumstances of considerable difficulty, to judge from the immense amount of timber shoring required to sustain the outer walls of the substructure on all four sides. It is now ground floor high, and promises, with its ashlar façades and windows arranged in groups of shafted arcades, to be a structure of no common merit.

Mr. Worthington, who is, by the way, about to erect a large Infirmary near Manchester, has just commenced the ashlar facing of a very large warehouse in Quay-street, Deansgate. The style will be Pointed, and the details somewhat massive. Deansgate, once with its offshoots a highly-respectable part of old, or rather "ancient" Manchester, is one of the last of its thorougfares in which one would expect to come upon an ornate Manchester warehouse. The warehouses have, however, come down heavily upon Deansgate and its tributaries; and in its north-western parts particularly many excellent red-brick warehouses, with massive stone doorways of great merit may be seen. The warehouse of Messrs. Henriques and Co., in Cumberland-street, Deansgate, has for example, a remarkably handsome stone doorway. The architects of this warehouse are Messrs. Clegg and Knowles, from whose designs another new warehouse, noteworthy for its two elegant doorways, has been built at the corners of Booth and Fountain-streets. This latter is one of the handsomest warehouses in the city.

"Loyd's House," a large pile of warehouses near Albert Square, will be found very well worth a visit. It has three façades of French Gothic character, treated with great simplicity and good taste. The mode in which the open staircases, with their shafted and foliated stone window openings, are made to harmonise, while they all necessarily vary with the rapid declivity of the side street, struck us as especially commendable. The building has been erected from the designs of Messrs. Speakman and Charlesworth, the architects of two other good commercial works in the city: Lancaster Avenue in Fennel-street, near the Cathedral, and a carriage repository in Devonshire-street, Oxford-road. These are both works of little stone and much brickwork, but each of them masterly in its way.

Little by little, the approaches about Albert-square are being improved—old corners of streets are being taken down, set back and rebuilt. In this way a large slice of Bond-street, by Cooper-street, has been wholly carried away ; and a new fronted building of passable Italian architecture has been thrown open to view. On its opposite side is a row of shops and chambers of no small pretence, but very unsatisfactory proportions ; better, far better, than its more pretentious and worse-proportioned neighbour, the Freemasons' Hall, but hardly up to the mark of a Manchester trading façade. It is too *comprehensive*—"not to put too fine a point upon it"—for the inadequate site placed at the disposal of its architect : for it has had an architect, which, by-the-bye, is more than we can predicate of one London building in a hundred. Somehow, it strikes us that, although the Mancastrians will doubtless do everything that can be done by good building all round it, Albert-square will never be a handsome *Place.* The new Town Hall will be unquestionably a very handsome edifice, but its serrated skylines will ill accord with the square-shaped, many-windowed, tall cubical blocks of warehouses by which it will very probably be surrounded on all sides. It is a structure that, to have fair play, needs foliage by day, and by night will need lively-looking, be-curtained, and illuminated windows of *inhabited* rooms to keep its quasi-domestic character in countenance. Good architecture will effect wonders ; but it will not, when the citizens have shut up their handsome warehouses, and left the smoky town to itself, make the Mayor's parlour a very lively place to look out from at night, or o' Sundays ; nor will it then make a very cheerful background to the edifice itself for the visitor to look at. We commend the idea—and be hanged to it for its extreme gloominess!—to the able architect of the building. Perhaps he may do something to induce his *quondam* fellow-citizens to build dwelling-houses or shops along the adjacent streets, and—what is more to our purpose—to dwell in, or over them, with their families ; as their forefathers used to do in the days when St. Ann's and Marsden-squares consisted of nothing but dwelling-houses, and were each planted around with poplar trees. With the Editor's leave, we must enlarge a little on this theme, for it would really seem to have a trifle to do with the question of Gothic or Classic. No one for a moment would put Mr. Waterhouse's spirited Town-Hall on a par with the dismal, dry, deadly "architecture" of the Royal Infirmary, on whose long-porticoed façade a sunbeam is never seen to fall ; and yet, though the trees are all gone (or as good as gone) the Infirmary and its site—largely made up of warehouses—is always interesting. The Infirmary site is confessedly a superior one to Albert-square, but the argument remains good for all that—that is to say as far as it goes, which is this : to wit, that if citizens will not live and sleep in their city, but will nightly and o' Sundays shut it up *like a tomb,* it is very questionable whether, in the building of their Town-hall, they had not better house their mayor in an edifice of Greek, Roman, Egyptian or other *monumental* architecture, than in a picturesque Gothic shrine, out of all keeping with its melancholy background of shut-up shops, and of what is even more tomb-like and gloomy, shut-up warehouses. It has become quite a common remark that of a Sunday or an evening Manchester proper resembles a big tomb or city of tombs, horrible to walk through. The city of London is very fast falling into the same condition. Here is a question for the Aryans and the Mediævalists to cogitate upon.

The warehouses and commercial buildings of Manchester are enough of themselves to occupy an entire article. If a collection of even the doorways of these buildings were to be published, it would put to shame—not the architects, for no one *in* London employs architects as a rule, but—the commercial buildings and speculating builders of the metropolis.

There is a dearth of public buildings beyond the two large ones already mentioned. Messrs. Hansom's large church of The Holy Name, in Oxford-road, is considerably advanced, but not yet ready for the roof, though it has already reached a very commanding height of masonry. Its outline is unquestionably picturesque. Owens College, in its neighbourhood, is commenced, but not yet risen out of its foundations. Hard by it Mr. Woodhouse, the architect of the elegant Wesleyan church at Longsight, is about to erect a new congregational church.

House-building of a small class is very brisk in the environs of the city. There is a prevailing rage for octangular bay windows all over the town, these appendages being introduced into even weekly dwellings, disposed in long rows side by side and *vis a vis,* with utter disregard of seclusion or privacy of any kind as elements of comfort. We wish we could record an improvement in the planning of the backs of Manchester dwelling-houses, but we cannot. It would seem that with the greater pretentiousness of the fronts has grown up a still more contracted allowance of space to the back yards ; nor is the evil—always peculiar to Manchester house-building—restricted to the dwellings of the poor. It extends, and that in a more remarkable degree, to the dwellings of the better classes—to houses of £40 and £50 a year, which in Manchester is considered a tolerably high rental. The midden system still exists, but has lately been severely discussed by the authorities, and some measures of amelioration have been adopted. If the earth closet system *is ever* to prevail anywhere in England, Manchester would afford a very fit field for the energy of its advocates.

◆

Mr. W. Deane, late of the Institute of Painters in Water Colours, has been elected an associate of the Society of Painters in Water Colours.

Worksop.—A new reredos is about to be fitted up in S. John's Church, Worksop, as a memorial to the late Mr. G. S. Foljambe, of Osberton. Three designs were submitted to the committee, viz., one from Mr. Clarke, of Nottingham (architect of the church), one from Mr. Thompson, of Nottingham and Ollerton, and a third from Mr. Theophilus Smith, of Sheffield. The last-named design was selected.

LAUNCHING OF A GREAT CAISSON.

FIG. 1

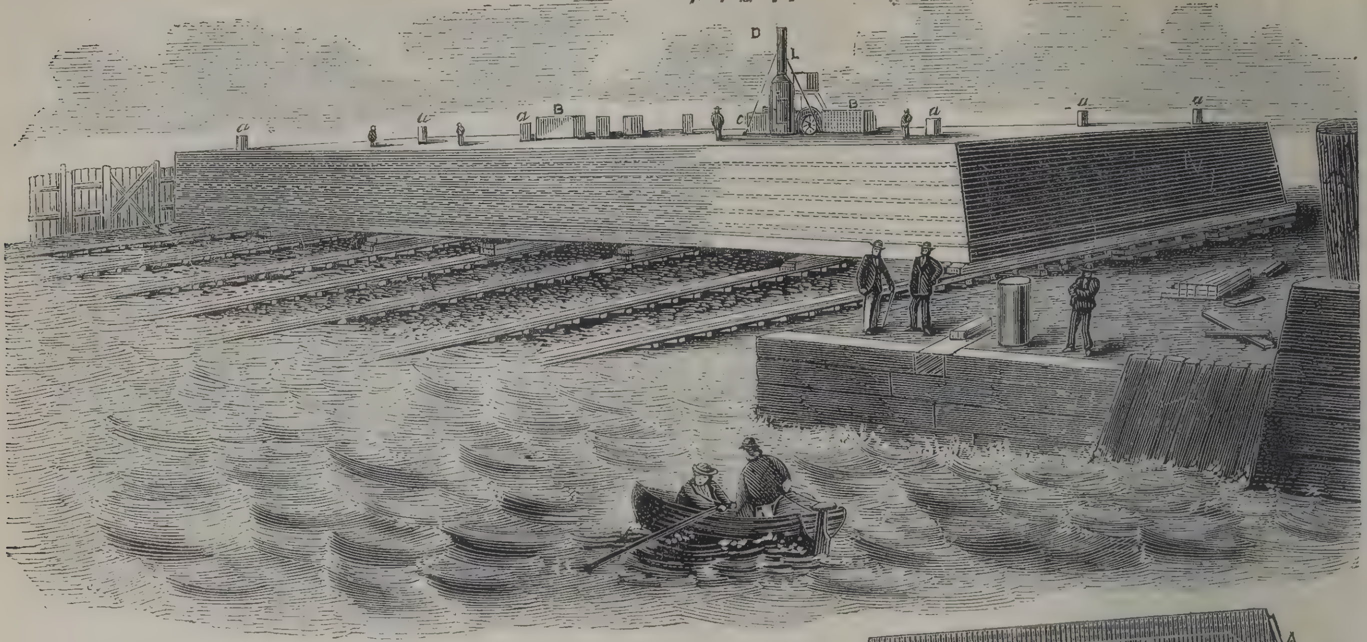


FIG. 2

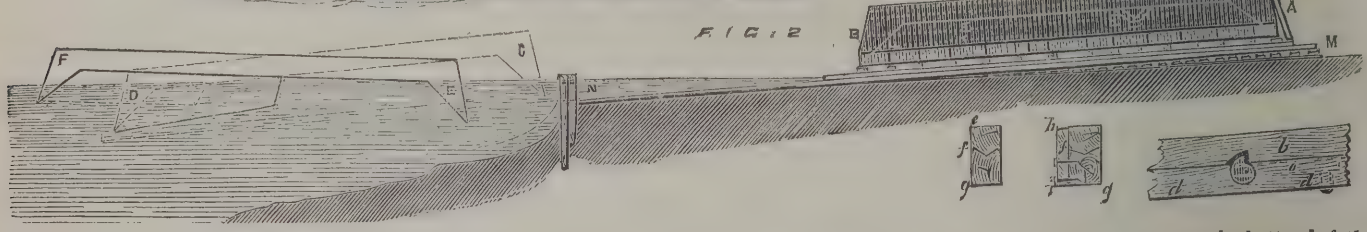


FIG. 3

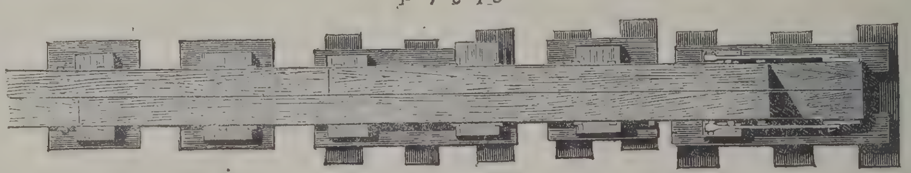


FIG. 5

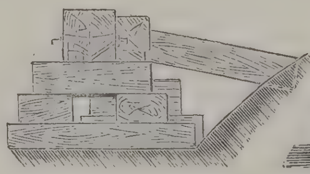
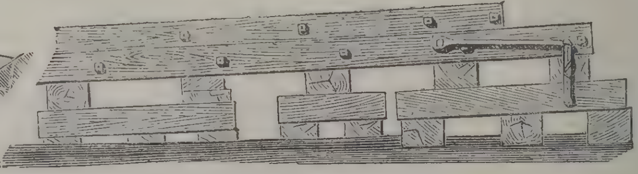


FIG. 4



THE launching of the caisson for the Brooklyn terminus of the East River Bridge, says the *Scientific American*, which was quickly and easily accomplished on the 19th March of the present year, was justly considered a noteworthy feat of engineering.

Our engravings show the caisson on the ways, as it appeared when ready to be launched, and also some details by which the construction of the ways and the plan of procedure in making the launch may be comprehended.

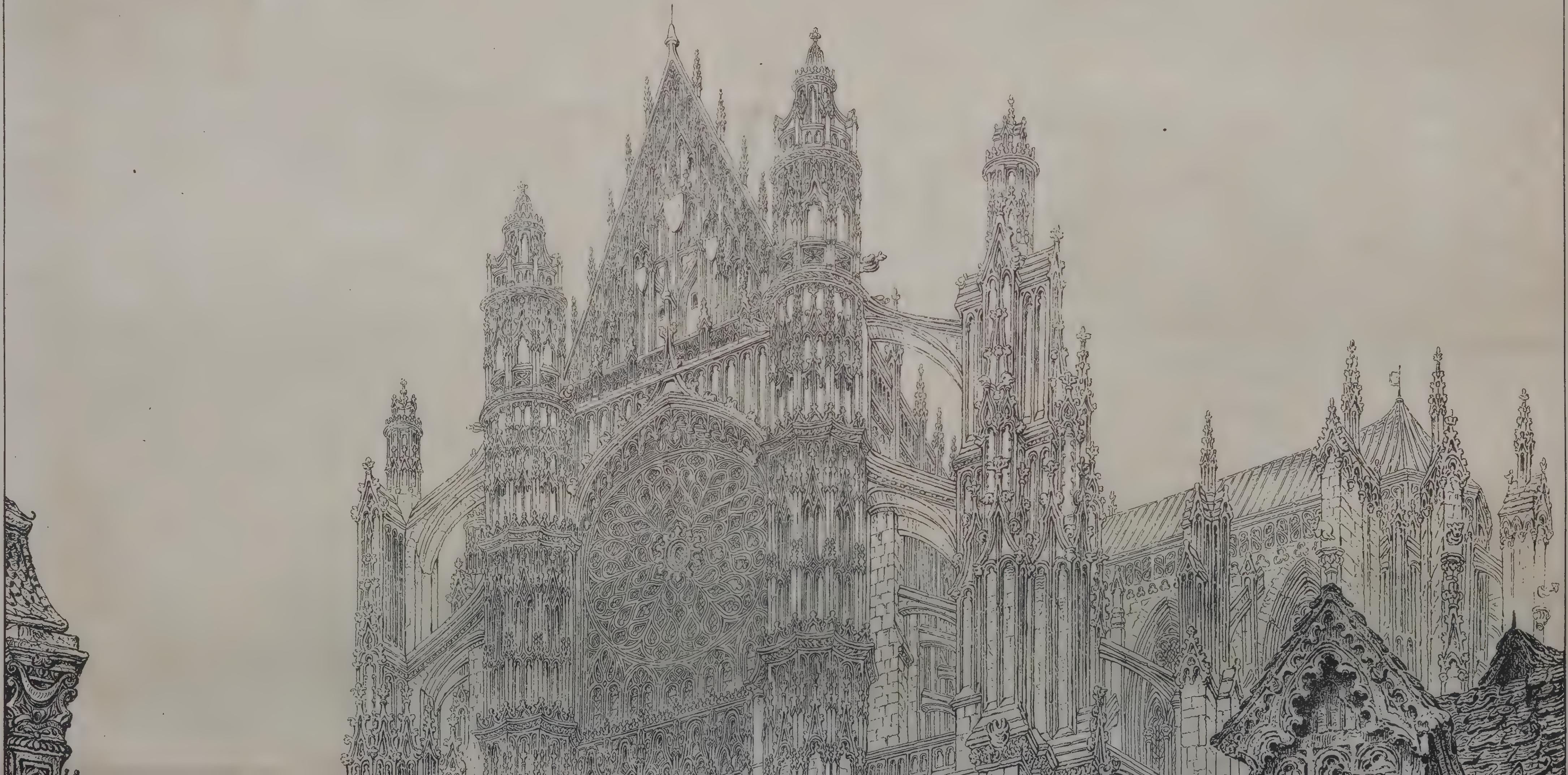
The structure was put together with its longer side parallel to the river bank, and about 100ft. distant from it, and the ways upon which it rested were seven in number, and each about 180ft. in length. These ways were laid in such a manner that their upper faces were curved to a radius of about 312ft., and at a slope which made the chord of this arc form an angle of about 5°, the curved sine of the arc being some 13in., and the upper ends of the ways 15·6ft. higher than the lower ends. By this means an accelerated motion was given to the caisson in the latter part of its transit; the increased velocity it thus obtained enabled it to overcome the great resistance it encountered from the water when it struck the river broadside on. The details show the form given to these ways, and it will be observed that they rest upon cross and longitudinal timbers; the letters *f g* refer to the bearing pieces of the fixed ways, and *e f* to the sliding ways attached to the underside of the caisson. The surfaces of the former of these were cut to an angle, as shown, that of the corresponding slide being made to fit, in order to insure a perfectly true motion of the caisson in the process of launching. Besides this, timbers *h l* were bolted to the inside of the two outer ways, which projected above the sliding surface, in order to check any swerving tendency. To insure a means of casting loose the caisson from every point at the same moment, a check cam, shown in the detail, was fixed into each of the ways near the upper end. The cam at the point where it took the bearing of the sliding way was provided with a projection which held it fast against the timber, and it was kept immovable by means of a lever secured by ropes at its extremity. These ropes being cast off simultaneously, the cams were thrown over, and the caisson was free to move equally throughout its length. The position of the caisson upon the ways when ready for launching is clearly shown in the figures. The position of the air chamber is indicated by the dotted lines, H K L, and at E is shown a partition, which was constructed to divide the air chamber and prevent the air from any sudden movement from one part of the caisson to another, which would have affected its stability. The dotted lines C D show the position assumed by the structure just as it left the ways, and E F represents it after it had been launched and had come to rest in the water.

The caisson inclosure extends some 250ft. along the river front, thence back about 300ft. The caisson itself has a frontage on the river of 168ft., and a depth of 102ft., the basin in which it is being sunk extending a few feet more in each direction. The caisson is, in effect, a box made of heavy timbers, 16ft. in depth, and divided by like heavy timbers into six compartments. This great compartmented box, without a cover, was turned bottom upwards and floated over the spot which it now occupies. Several layers of timber were then securely bolted over the entire upper surface, increasing its already immense strength, and sinking the structure until its sharp edges—protected by heavy iron plates—rested upon the bottom of the basin.

The problem was, and is, to sink this enormous caisson through mud and earth and boulders 40 or more feet, until a firm ground is reached, there to leave it as the foundation for the immense towers of the bridge that is to be constructed. This is effected by maintaining and constantly changing an atmosphere, and at the same time excluding the water from each of the compartments of the caisson: thus furnishing means for carrying on the work of excavation to the best advantage. The means to this end are a supply of air forced by steam-driven pumps through pipes and hose into the caisson chambers, and a sufficiency of weight on the upper surface of the caisson to counteract the buoyancy alike of timber and air, and maintain the caisson at all times firmly on the bed of the excavation. This weight is provided by commencing at once the erection of the towers. For this purpose the entire surface of the caisson is covered with blocks of heavy stone, the interstices of which are filled with the best cement. As the caisson sinks, other tiers of stone will be added, and when it rests upon its final bed the towers will be carried up their full height.

◆

Architecture at the Royal Academy.—The Royal Academy has resolved to entirely re-model its Architectural School. Owing to want of space when in Trafalgar-square, the Academy was prevented appropriating any special room exclusively for the teaching of architecture, but the removal to Burlington House has enabled it to provide a large class-room, fitted up specially for the purpose. Mr. Phené Spiers has been appointed master of the school, and has been instructed to proceed to Paris to make himself thoroughly acquainted with the present system of teaching adopted at the Ecole des Beaux Arts. The new arrangements will be ready for the opening of the coming winter season.



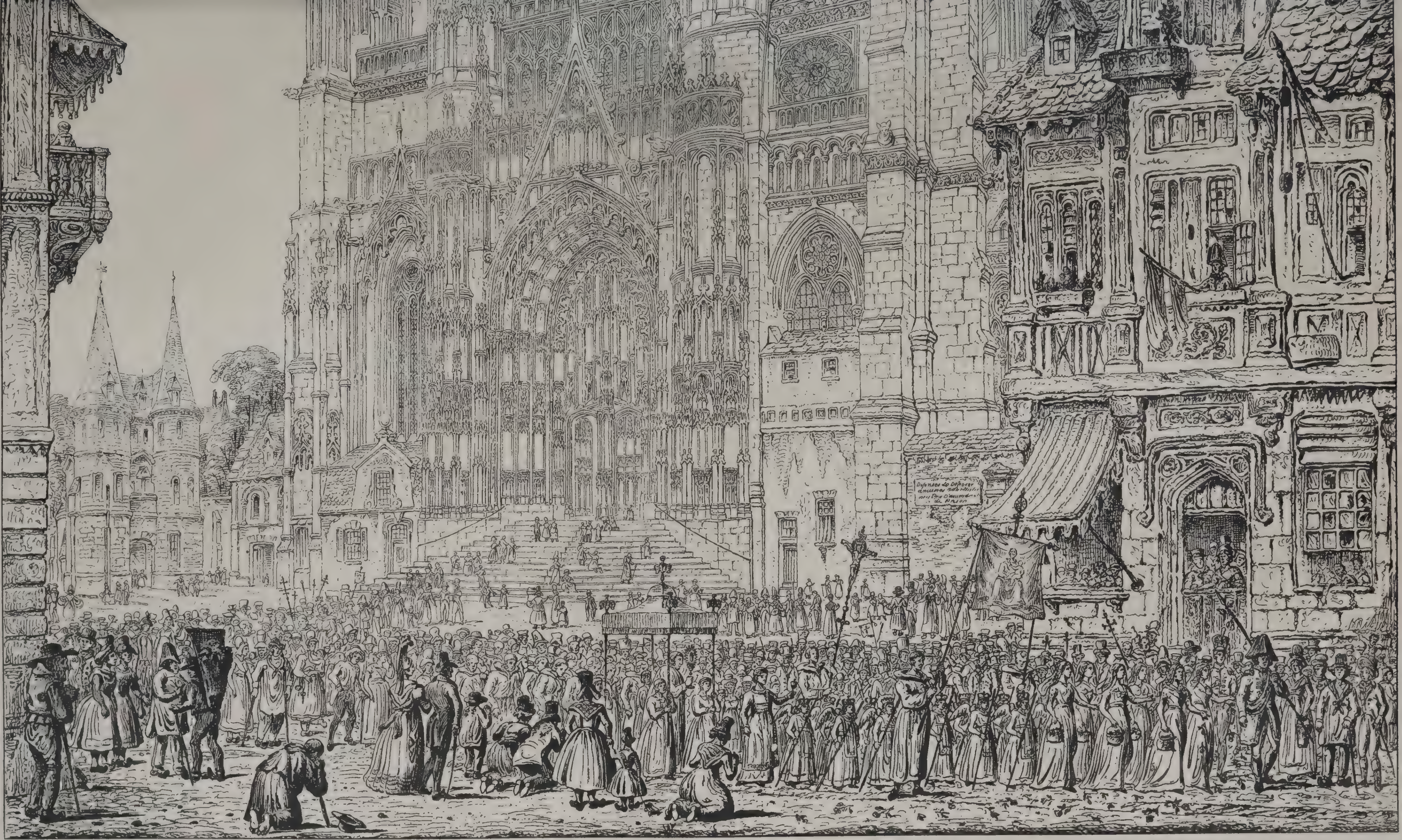


Photo-Lithographed by Whiteman & Bass, London

Cathedral-Beauvais.

FROM A SKETCH BY JOHN CONEY, 1829.

Furniture & Decoration.

UTILITY IN DECORATION.

IN treating of the theory and practice of modern house painting and decoration in these pages, we have not hitherto spoken of the utilitarian aspect of the question, a very important question to the majority of people, and necessary to be understood both by the decorator and the public.

It appears to us that, apart from the abstract opinions of this or that person as to the desirability of using imitations of woods and marble, or any and every of what are called shams, we are bound to take into consideration the usefulness and lasting properties of certain imitations, and their suitableness to the purposes they are used for, and for which they are best adapted. For instance, there is an imitation of stone on wood which is so good that no one can discover that it is not stone except by sounding or striking it, and we have known it to stand good when exposed to the weather fully 20 years, and at the end of that time be almost as good as at first. This effect is brought about by throwing common sand, or the sand from any particular kind of stone upon the paint when it is wet, in this wise:—The woodwork is well painted with four or five coats of oil paint. The finishing coat is mixed with white lead, boiled oil, and a little copal varnish, to give it "tack" or stickiness; it must be, of course, stained to the particular shade or colour of the stone you wish it to resemble. The colour is now laid on the work in the ordinary manner, and the sand is thrown upon it while it is wet. The sand may be thrown on the work from a common tin dredger, that is, a tin can about 3in. in diameter, with a perforated lid, exactly like the flour dredger of our kitchens. We believe there are machines made for the purpose, but the dredger answers the purpose very well. Care must be taken that the work is well covered, or else there will be more on one part than another, which will cause it to look shady; it is always best to throw as much sand on the work as it will hold, to make sure it is well covered, and if paper is placed under the part operated upon it will catch all the superfluous sand, so that there need not be any waste. The work should now stand for a few days, until the paint gets hard, the loose sand may then be brushed off. Now, if this is well and carefully done, it will have all the appearance and feel of stone, and will last for a long period without being re-done, but of course may be re-done at any time at a light expense. It is sometimes painted after being sanded, but if properly done it is much the best to leave the sand unpainted.

There are, of course, several kinds of sand which may be used, or the small pieces of any particular kind of stone may be broken into sand and used. By doing different parts of the work at different times, various colours of sand may be used, which has a good effect. If we are doing a column or pillar we might do the shaft with the sand of the red Mansfield stone, and the capital and base of the Yorkshire or Bath stone, or any other light-coloured sand, or in rustic work the stones might be done alternately. It will be understood that plaster or cement pillars may be done in the same manner. Now, here is an imitation of stone, simple, useful, and effective—having serviceable and lasting properties superior to any other method of covering and preserving wood.

The sand forming an impervious coating (in fact, it is a coating of stone, having this advantage over stone, that it is non-absorbent of wet or damp) the uses of this process will be evident, especially in districts where stone is not to be had except at great cost of carriage, and also in many country districts, where wood is plentiful and stone is not. It will be said by the realists, "Why not leave it as wood? Don't cover it and make it appear like stone, which it is not;" to which we may answer, that wood, especially when exposed to the weather, alternate heat, wet, and frost, soon becomes split up into innumerable cracks, and its surface gets rough and unsightly, its colour dirty and black; nail holes, and the rust from the nails become unpleasantly visible, and ultimately rottenness and decay in numerous forms set in, and it becomes unsafe, and has to be taken down and replaced with new wood. Now if the wood is done over as described, all this is prevented, the wood preserved, and always pleasant to look upon. It will perhaps be said, "Why not varnish the wood, and then it will resist the effects of the weather?" It is quite true that if the wood is well varnished it will stand for a time, but how long a time? If it is outside work, varnish will not stand above two or three years, even with the very best varnish. The heat of the sun dries up and exhausts the oil of the varnish, and when that is gone the gum shrivels up, cracks and turns white, peels off, and thus perishes, consequently the wood is left without protection.

In these cases artistic taste and love of the beautiful may induce us to leave the wood uncovered, but utility and common sense bid us cover it up, and thus preserve it. We remember some 30 years ago examining some exquisite carvings in oak and pear tree wood, which were rapidly falling to decay—worm-eaten and rough on the surface from the effects of dust, time, and neglect. We suggested that some means should be taken to arrest the decay, and thus preserve such beautiful and valuable works. The gentleman to whom they belonged rose up in arms at once at the bare suggestion. It no doubt seemed to him a profanation to touch them with any vile composition. As the artist had left them so they should remain, fresh from the chisel; a very proper feeling in many cases, but in this case, when it was so evident that Father Time was using his destructive chisel with such fatal effect, we ventured to differ, and after much persuasion we induced him to allow us to try what we could do with part of the work. Our first efforts were directed to the cleaning the carving from the accumulated dust of years, which we did as well as we could by first blowing all the loose dust off with a pair of house bellows; we then used small hog-hair brushes, and by supporting the weak parts with the hand we managed to clean it well without injury to the most delicate parts. We then used the bellows again to blow off any remaining particles of dust from the interstices and undercutting. When it was as clean as we could get it, we placed it in a tub large enough to hold it, and then filled the tub with the purest linseed oil we could procure high enough to cover the whole of the carving; we let it stand in the oil for 24 hours, and when taken out we cleaned off all the superfluous oil with large and small hog-hair brushes, wiping the oil out of the brushes as we used them, until there was not left sufficient oil on the surface to form a skin. This is a very important point in the process, and requires great care, otherwise the carving would be spoiled. The oil darkened the wood a little, but not so much as would be supposed, the oil being free from litharge or any other dryer or colouring matter. After 20 years had elapsed we again saw the same carvings, and we found that those which had been treated in the manner described were just in the same state as when we left them 20 years before, but had become so hard that a sharp knife would hardly touch them; but those which had not been submitted to the same process were in some parts irretrievably gone, and the rest were rapidly following. Now we hold it to be unwise, and, in fact, almost a crime, to allow these beautiful creations of man's genius to go to decay and be destroyed for the sake of a prejudice or rather an obstinate persistence in what is evidently a mistake. Look at the exquisite gems of art left us by Grinling Gibbons, and others, which are dropping to pieces and crumbling away simply for the want of some such means being applied to preserve them. Would it not be better a thousand times over to sacrifice some little of their beauty than to see them as they are? Of course we would all rather see them untouched, as they were left by the artist; but common sense steps in and points to the fact that however beautiful these things are, and although they may appear, and, in fact, are more beautiful left as they are, yet the material of which they are composed is so perishable that they must of necessity soon decay, and all the labour, and skill, and thought employed in their production be lost for ever, except some means be taken to stay the hand of the destroyer. We are surprised that the remedy has been so long delayed. We do not advise varnish or polish to be used; the process we have described does not produce that result, but leaves the wood nearly dead—that is, without gloss; although there is no better polish for wood than linseed oil itself. If a mahogany or oak table be regularly rubbed for years with pure linseed oil, the polish which results is the best and most indestructible that can be produced, and becomes so hard in time that scarcely anything can injure it. We have digressed somewhat with regard to carvings, but we hope not fruitlessly so; and trust that this brief notice may call attention to the subject, and help to a remedy.

Imitations of woods and marbles may be classed amongst the useful arts. There are thousands of English homes in the construction of which no other wood is used but the common spruce pine, full of ugly resinous knots, and which, for that reason and many others, has to be painted and puttied to make it passable. And if we could use real oak and mahogany for our doors—that is, if it were cheap and plentiful enough for that purpose—it would not be wise to leave it unpainted, as it would require so much time and trouble to keep them bright and clean, that nine-tenths of the world could not afford the necessary time and cost to keep them in order; consequently it is not only more convenient and economical; but it is really better to have painted woodwork in the majority of our houses—better because woodwork painted, grained, and varnished is the most cleanly-looking and serviceable method of decorating the doors and other woodwork in all those rooms in our houses which are most used, or which require to be done so that they will not easily soil. For we cannot always dwell in a china shop, and must have some rooms where we can move about at our ease, and where we are not continually afraid of spoiling something. Now for this purpose nothing can be more appropriate or better adapted than imitations of wood, well done and well varnished. Its lasting properties are very great, and at any time a wash down and a coat of varnish makes all new again. For public buildings where real oak or mahogany is not used, we cannot substitute anything equal to it. If we paint them in dark low-toned colours, and varnish them, they will not last so long, nor look so cheerful, nor so appropriate, for even the objectors to imitations of all kinds will agree with us that wood painted in imitation of wood is much more in accordance with good taste than if painted in any other manner. If we were to paint a door in imitation of marble, we should be committing an offence against good taste and good sense, notwithstanding that there are real marble doors, of which the Russian malachite doors in the Great International Exhibition of 1851 were examples; but if we paint them in imitation of wood, we do not offend our sense of propriety, simply because it is wood, and has the structural character of wood. If we were to paint a column, or a pillar, or pilaster, or a plastered wall in imitation of wood, we should be doing wrong—we should err in judgment, in taste, and against structural propriety. We do not here mean that a stone pillar or column should be painted, but we build our columns and pilasters of brick and cement, as 99 out of every 100 are done.

In the interiors of our dwelling houses and public buildings there cannot surely be any impropriety in finishing them in imitation of stone or marble, of which materials they ought and would be built of if they were only cheap enough. The utility of the practice is unquestionable; that it is economical is proved by the fact that if once properly done, and ordinary care taken of it afterwards, it will last and wear almost any length of time. We ourselves have seen work of this kind which had been done upwards of 50 years at the least, and with the exception of its colour being a little darker than when it was first done, it was in other respects quite as good as when newly done; this very fact alone is a sufficient proof of the legitimacy of such methods of decoration. What can be better adapted for a public staircase than a good imitation of one of the granites, grey or red? If well done and well varnished it will last for scores of years, and will wash and clean with little trouble, and although thousands of people may pass up and down the staircase, its serviceable qualities are so great that it will suffer no great harm. In this case we, of course, only mean that the granite should be done up to a certain height for purposes of utility. The upper part may be painted or ornamented in any suitable manner, either in distemper or oil colour. We shall find that there is a suitableness and an unsuitableness in the application of decoration to special purposes, and that independently of any abstract views we may have in regard to beauty, or this or that style, we are bound by the circumstances of any particular case to consider not which would be the most beautiful, but which will best combine beauty, usefulness, and durability. For instance, we had occasion a few days ago to go into a first-class shop in one of our principal streets, in which the counter front was painted in imitation of walnut wood, and the mouldings were part black and part gilt. The gold was in a very dilapidated state, scratched, and rubbed quite bare, and injured by the continual dusting and cleaning necessarily required in such a situation. The gold being upon the round beads (which were the most prominent members of the mouldings), was of course most exposed to wear and tear, and soonest spoiled, and there is nothing looks so bad as gilding when it has got into such a state. Now here a great mistake had been made. The principle of utility had been entirely lost sight of and sacrificed to the vulgar desire for glare and glitter. Had the decorator been content with his work without adding the gold to it he would have produced a very successful work, and one which would have been serviceable, quiet, and good, instead of which the reverse was the case. As a matter of taste we object to gilding on grained woods; the two do not assimilate, and seem to have no connection with one another. If the work were real wood polished, we should never dream of gilding any part of it. There is really no necessity for it, and it is, therefore, superfluous. In the choice of paper hangings, furniture, carpets, and other aids and necessaries for our comfort and happiness, we are bound to take into consideration utility as well as beauty.

◆

THE BEST METHOD OF PREPARING MORTAR.

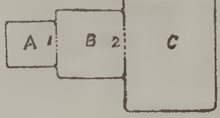
THOUGH many of the accidents which are constantly taking place from the weakness in construction of our buildings, are rightly attributed to faults in the original plan, and the incompetency of the architect, it not unfrequently happens that a large portion of the blame should be placed upon the builder having the immediate charge of the work, and under whose supervision are conducted those minor details in construction upon which depend to so great an extent the stability of the whole. Walls may be made of insufficient thickness and yet stand for a long time if the masonry be good; and, again, they may be heavy enough in the plan and fall when built if the mason do not thoroughly understand his business. In such a case blame is often attached to the architect when an accident occurs, which should in reality hang upon the skirts of the builder. Upon the quality of the mortar used in construction depends, in no slight degree, the strength of the walls; and regarding the best method of mixing mortar, it is proposed in this article to offer a few suggestions.

The common mode of making mortar is to first put the lime to slack in a box prepared for the purpose, and, after the slacking has continued for a time, to mix with it, in the same box, sand which has been previously screened. The mixture thus compounded is afterwards shovelled out of the box into a heap; and as mortar is required for use, a portion of this heap is drawn out and tempered to the proper consistency. In mortar prepared in this manner the mass is rarely homogeneous, lumps of unslacked lime and portions of gravel occurring promiscuously throughout the whole.

The proposed improvement (says the *American Builder*) in mortar-making provides an entirely different mode of operations, and, it is believed, obviates all the evils attending the present system.

The plan to be adopted, which, in the estimation of the writer, is at once the most thorough and the most economical, is as follows:—

Three boxes, A, B, and C are first constructed, the box A being higher than B, and the box B higher than C. These boxes are connected by passages 1 and 2, at which are placed screens, such as are ordinarily used in mortar-making. Into the box A is put lime for slacking, and there mixed with water and manipulated until it has about the consistency of cream; after which it is allowed to run through the screen 1 into box B. It should be premised that, while the process is conducting, boards are placed over the screens 1 and 2, and removed only when it is desired to unite the contents of different boxes. After the lime has been admitted to box B, unscreened sand is thrown into the box in quantity deemed sufficient to make the mortar. The sand and lime, thus mixed, are then run through the screen into the mortar-bed C, and there allowed to stand for 24 hours, when the mortar becomes fit for use, and reqnires no further tempering or mixing before its application.



The advantages of the above method are very apparent. In the first place, about one-fourth less lime is required than in mortar made in the usual way, and the mortar is more thoroughly mixed—and, therefore, much better—than that dealt with by the common process. Again, since the different boxes are separated by screens, the preliminary labour of screening is entirely avoided, all the lumps of unslacked lime being retained in box A, and all gravel and foreign matter in the sand is retained, in a similar manner, in box B. After the mixture is finally run into the mortar-bed, all the refuse matter remaining in A and B can be shovelled out, and the boxes made ready for a repetition of the process. While the mortar is running into box C, lime can again be slacking in box A, without loss of time, until the mortar bed is filled. The bed C can be made of any dimensions to hold the mortar required in the conitruction of a large building. In regard to the quality of the mortar made by the above process there can exist little doubt. It is more easily applied, more durable, and better adapted for all kinds of work than that made in the usual way. The writer has followed the system for many years, and has continually greater reason to be satisfied with its decided superiority.

J. P.

◆

CIVIL ENGINEERING AT THE TIME OF CHRIST.

THE Roman genius for construction was the grandest the world has seen. The traveller visits the cathedral fanes of York and Bourges, Burgos and Seville, Cologne and Milan, the castles of Windsor aud Heidelberg and S. Elmo, the temples at Pæstum, at Athens, at Baalbec, and at Thebes, the palaces of the Maharajahs, on the banks of the Ganges, sees monuments of splendid beauty, unsurpassed in any age, by any people; yet he returns to Rome, and says, while standing upon the vaulted ruins of the baths of Caracalla, or while counting his steps across the floors of Constautine's Basilica, or while looking down from the utmost tier of seats into the arena of the Coliseum, that the constructive genius of all the rest of the world must bend before the Imperial Latin Engineer.

Never but once were thus conbined in the political situation of a city all elements needful for carrying up the culture of mere building talent to the highest pitch while at the same time were offered unlimited opportunities for its exercise. Rome was a seaport; backed by a country fertile in supplies, a peninsula of mountains made of marble, in the centre of a vast sea, crowded with well-settled islands, and girt about with coasts inhabited by the oldest and most advanced communities of man. The Roman States were still physically undebauched; in the prime of its strength; irresistible lord of all the Western and half the Eastern world; was infinitely rich; irresponsible and unscrupulous; proud and vain; sensual and sensational; loving war only for the sake of its fruits, and preferring peace for the sake of its enjoyments. The Bath-house was the church of Rome, combining the essential qualities of the Exchange, the Club, the Museum, the Bar-room, and the Polls. The Emperors cnriched themselves and confirmed their power by watering their political stock. Caracalla could afford his horse a golden manger in a temple of its own, after affording his fellow-citizens a Bagnio as large as the Tuileries, in which ten thousand bathers could enjoy themselves at once, the ceilings of which were 80ft. high, the partition walls as massive as the abutments of a bridge. The sweating-room alone was larger than the Catholic Cathedral in Philadelphia, and surrounded by arcades, inside, of costly Corinthian columns, the abstraction of which by the mediæval princes of modern Rome for use in the construction of their private palaces brought down the ceiling with a crash which shook the city as far off as the Castle of S. Angelo.

S. Peter's is built on the model of these ancient monuments. Its nave is precisely of the size and shape of the great room in the Baths of Diocletian and of the name of Constantine's great church. Its dome is precisely the size and shape of the Pantheon, which, as is now well known, was yet another Imperial Bath-room, since then appropriated to the uses of religion—merely a change from hot to holy water. The great Bath-room of Diocletian is also one of the grandest churches of modern Rome.

The necessity for supplying an amphibious population with floods of fluid developed the civil engineering talents of the Empire. Scores of aqueducts were constructed above ground to bring the waters of the Appenines into the city, and an elaborate system of sewerage carried it away again to be re-purified in the bosom of the Ligurian sea. While Signor De Rossi has been excavating the ancient catacombs outside the walls, and the Government antiquarian, Baron Visconti, the ancient marble yards and police stations inside the walls, and the Emperor Napoleon the foundation rooms of the Palace of the Cæsars, the British Archæological Society of Rome has been digging along the foundations of the ancient walls themselves, and opening up the underground water-works, reservoirs, and sewers of ancient days. They have determined the true site of the fountain of Egeria and of King Numa's Palace; how Royal Rome, Republican Rome, and Imperial Rome were in succession fortified with longer and larger circumvallations; and how the water pipes of the engineers of the Middle Ages were ranged within and upon the conduits of Servius Tullius aud the Tarquins. Any civil engineer who is curious in such matters, or would like to see nice pictures of the rubble work of his predecessors in the profession twenty-two centuries ago, can gratify himself by looking over Mr. Parker's "Notices of Recent Excavations in Rome," just published in Part I. of the forty-second volume of the *Archæologia*. By-the-bye, Mr. Parker's little hand-books of architecture are not only indispensable for the tourist, but ought to be in every American gentleman's library. And it is worth knowing, also, that the Archæological Society, which the foreigners in Rome keep up, has upwards of a thousand special photographs of specimens of Roman construction, arranged in the order of time.

The first part of this interesting collection is already for sale, and illustrates the historical construction of walls in a series of sixty-four examples, beginning with the wall of Romulus, 750 B.C., and taking on the average one for each generation. The series is continued down to the 13th century A.D. In the time of the Empire the dated examples are so numerous that they are necessarily subdivided ; afterwards the churches and monasteries supply us with a continuation of the series. This is really a great work for the history of architecture, such as has never been done before. Even D'Agincourt, in his admirable work, overlooks construction, which is the foundation of all. It is sometimes impossible to get photographs from nature from want of sufficient space, and it is generally necessary to fill up the excavations again immediately, so that plans and drawings are the only mode of showing what has been made out ; but photographs are made of these and sent to the Oxford Architectural Society.

When will we have in Philadelphia an Architectural School, liberally endowed by private munificence, furnished with a splendid library, folios of drawings and photographs of all the monuments of all ages, and taught by artists of merit and learning, and by engineers of rank, genius and experience?—*R.R. Journal and Mining Register.*

◆

BEAUVAIS CATHEDRAL.

OUR illustration is a reproduction of a picturesque sketch of the Cathedral at Beauvais—one of the finest examples of 13th century work in France. Its beauty, however, though great, is incomplete, there being neither nave nor steeple. The steeple was destroyed by a tempest in 1574, only ten years after its erection, and this accident prevented the completion of the church. The choir is of great beauty, and has the appearance of being more lofty than that of Amiens, though in reality it is not so. The see of Beauvais was one of great importance, and the town itself occupies a conspicuous position in history as a fortified city of great strength.

◆

THE WORKING MEN'S EXHIBITION.

THE general verdict which has been passed upon the show (says the *Saturday Review*) is that it is an interesting one, but that it does not fulfil the purpose which it proposes to itself—*i.e.*, "to stimulate and reward individual skill and intelligence" by separating the results of personal design and execution from the mere results of combined work. As regards nine-tenths of the Exhibition, it is just the old story over again—precisely what we have seen at London and Paris—a vast aggregate of show-cases, shop-fronts, pattern cards, and advertising sheets, all very important to enterprising tradesmen ; but, as regards craftsmanship, we learn nothing, or very little—precisely because there is nothing, or next to nothing, to tell us. It is something for us to feast our eyes on elaborate inlaid tables and costly specimens of marqueterie furniture, but, in the first place, they are not the work of any one workman ; and next, we should have to go to a 'Co." to buy them. If these Exhibitions are good for anything, they ought to bring us face to face and mind to mind with the artificer ; as it is, they refer us to Messrs. Castellani, at Rome, or to some great ironworks in Staffordshire or Newcastle. Even when, as in the matter of Indian embroidery or ivory carving, we have the genuine work of the solitary artisan, he is intercepted by the wholesale house and the importer. Next come the small class of those British workmen who exhibit their own productions in jewellery, chasing, and enamels, in porcelain painting and glass engraving, in stone carving, and other works which may be called artistic. It is to the encouragement of these artistic workmen that our art-schools and prizes have for many years been sedulously employed. But all those who have paid attention to the matter bear testimony to the little results which have been attained. Whenever an artist workman has been educated, or has educated himself, up to a certain and often creditable amount of proficiency, he is snapped up by the trade, and set to work on producing articles of the regulation fashion and pattern, and the the fire of original genius is stamped out of him before it is thoroughly kindled. We spend infinite money on producing our Pegasus, and then set him to plough. Nor must it be forgotten that shopkeepers exhibit the greatest reluctance to allow any communication between a customer and the workman. If by accident one finds a piece of jewellery or an enamel in a shop which exhibits remarkable taste or skill, it is impossible to get at the artificer. An order will of course be taken over the counter, but you can never find out the working man. Intelligence and skill in the craftsman may exist, but the firm keeps this intelligence and skill to itself. What is wanted is, as the programme of this Exhibition professes, union between the employer and the employed ; but the union, to be really valuable, should be a union between the amateur who gives a commission and the workman who executes it. The union which does exist is between the middleman—the shopkeeper—the firm—capital—and the workman, not between the customer and the craftsman. The working man in these bazaars is generally a mere phrase ; the person who profits by them is the shopkeeper ; and it is for this reason that, as the newspapers complain, so little care has been taken at Islington to announce the name of the workman, or at least to announce it with such distinctness that you can get at him, and so much care has been taken to announce the shop where the production may be bought.

◆

LIME BURNING.

THE quarries at Rockland, says the (American) *Architectural Review*, near the mouth of Penobscot Bay, Me., are at present worked on a more extensive scale than ever before. The old-fashioned kiln for burning the limestone has been entirely superseded by the patent perpetual kiln, and a large amount of capital is invested in the business. The kilns are situated on the shore of a peninsula, and are built at the foot of a bank and at the head of a wharf. The kilns are constructed with walls of thick granite, and lined with fire-brick, being eighteen feet square and thirty feet deep, narrowing towards the lower part. Each kiln will hold from one hundred and fifty to two hundred casks of lime, and a charge of limestone rock and fuel is burned in from seven to eight hours, and is drawn three or four times a day, according to the character of the rock. The lime, it is stated, swells in the kiln, and prevents the unburned portions from falling down. When the lower layer is sufficiently burned, iron rods are run into the furnace, and the lime, in large glowing red lumps, is removed by means of long handled shovels, and when cool is broken up, sorted, and packed in casks. The fuel is either wood or bituminous coal, the kilns using one cord of wood or two tons of bituminous coal to produce the same yield. One hundred casks of lime consume in their manufacture four and a half cords of wood. The kilns and the fuel are covered by large sheds, the buildings for a pair of kilns occupying an area of seventeen thousand square feet.

◆

BRICKMAKING BY MACHINERY.

A MEETING of the Manchester Institute of Engineers was held on Wednesday week in the Royal Institution, Manchester, to hear a paper read by Mr. J. F. M. Pollock (Messrs. Pollock, Laing, and Powley, Leeds) on "Brickmaking by machinery." Mr. W. W. Hulse presided.

The paper contained an elaborate description of Pollock's patent brickmaking machine (illustrated by a model). The invention consists of powerful grinding rollers, pug mill, rotary moulding table of improved construction, and a press, the mould or moulds of which are independent of those in the table. A self-acting delivery belt, the driving apparatus of which is constructed on an improved principle, so as to avoid all possibility of slip, and a rotary brush for removing any sharp corners or loose materials from the bricks, are also added ; and there is an improved system introduced for lubricating all sides of the moulds or bricks, in such a manner as to be independent in its operation of the attendant. The moving faces of the machine which have to work against the clay are all of steel, as also are the pug mill, driving wheels, shaft, and knives. When common bricks are required, the press may be thrown out of gear, and the machine may then be worked at an increased velocity. In concluding his paper, Mr. Pollock made reference to those who would hinder the introduction of machinery to supersede labour. He said the introduction of machinery had always created a demand a thousand-fold larger than the most sanguine ever looked for. Then why did the working brickmaker shut his eyes to this fact ? Could he not see that when bricks are made by machinery his position would be raised from that of a drudge to that of a scientific *employe?*—that the demand which was now supplied by numbers of little masters who could barely earn a living would, with mechanical agency, become so thriving a business that the working man's practical abilities would become tenfold more valuable, and he would no longer need to bring his wife and children into the open brickyard and earn his living during a few months in the year, but would take his place among mechanics and other artisans who owed their existence to the mechanical resources and inventive genius of this great country? Surely the common sense of the working brickmaker could not long remain unimpressed by the false position in which he must put himself by taking such a stand ; and the force of circumstances, the inevitable current of advancement, would force upon him that which he vainly strove against.

A vote of thanks was given to Mr. Pollock for his paper, which he acknowledged, and afterwards explained the working of his machine to the members present by a reference to the model.

◆

ROYAL ARCHÆOLOGICAL INSTITUTE OF GREAT BRITAIN AND IRELAND.

THE congress of this association was opened on Tuesday afternoon, at the Guildhall, Leicester. The Mayor, attended by the Town Clerk and Members of the Corporation, met the members of the Institute in the old Town Hall, where the inaugural proceedings took place. Among those present were Lord Talbot de Malahide (President of the Archæological Institute), the Venerable Archdeacon Fearon, Rev. R. Harley, F.R.S., Rev. E. Hill, Mr. J. H. Parker, F.S.A., Archdeacon Trollope, Archdeacon Stanton, Professor Lewis (Cork).

The first business was the presentation of an address of welcome from the Mayor and Corporation of Leicester. This briefly alluded to the objects of archæological interest in the town—the Norman remains, churches, &c. ; and also to the historical connection of the county. The Mayor regretted that necessities of commerce had caused the demolition of certain Roman remains ; but now they must reap consolation from the more Christian and more humane sentiments which replaced them.

Lord **TALBOT DE MALAHIDE**, in acknowledging the warm welcome of the people of Leicester and Leicestershire, referring to the Mayor's remarks, said he considered the two objects of the advance of civilisation and commerce, and the preservation of antiquities, might be perfectly reconciled. It was possible for a city to follow the line of progress, and, at the same time, not to disregard the memorials of the glories of our forefathers. He also made some remarks on the ancient character of municipal corporations. It was, he said, very difficult to trace their origin, but some people went so far as to say that the Romans left the traditions of corporate bodies, which afterwards were adopted and modified in subsequent ages. But antiquity was not their only honour ; they had played in nobler games than any of the continental cities. They had not lent themselves as submissive tools to despots, who wished to stifle the expression of public feeling. On the contrary, they had always banded themselves with those who were in favour of moderate reforms for the improvement of the country, and there was no nobler period in the annals of Corporations than when Simon de Montfort, with the aid of the barons and the burgesses of Leicester, began his career, and succeeded ultimately in laying the foundation of the British House of Commons.

Mr. **CLARKE** acknowledged the welcome offered by the landowners of Leicestershire, and pointed out that the county had given birth to or possessed descendants of Fielding, Beaumont, Herrick, and Haselrigg.

Archdeacon **FEARON**, in welcoming the Institute, on behalf the clergy, spoke of the humanising influence of the study of the past, and called to mind the fact that it was from Leicester that Richard III. set out for Bosworth Field, whence he was never to return.

Rev. C. J. **VAUGHAN** moved the welcome of the clergy ; and Archdeacon **TROLLOPE** acknowledged it.

Rev. R. Harley welcomed the Institute on behalf of the Local Literary and Philosophical Society.

Sir T. E. Winnington (Worcestershire) acknowledged the welcome, though confessing that in the West Midland counties their associations with Leicestershire were more of a sporting character.

This finished the formal business.

Mr. Parker, F.S.A., then gave a short description of the Guildhall, which, he said, was built in the time of Elizabeth, and was, in fact, opened on the day of the defeat of the Spanish Armada.

Some local objects of antiquity were then visited, Mr. Parker being *cicerone*.

On Wednesday evening the first neeeting for the reading of papers was held in the Freemasons' Hall. Some of these we hope to be able to notice next week.

Discovery of a Monumental Cross in Faversham Creek.—Mr. George Bedo furnishes some observations on a monumental cross which has been found in Faversham Creek, and now standing in the grounds of Davington Priory. The shaft supporting the cross is formed of various twisted columns, formerly brought from the ruins of Faversham Abbey. The transverse bar on the front of the cross has the following words incised upon it: "Marget Warmecoort." Apparently an inscription had once been on the back, but it is now obliterated. This is said to be the only existing monumental cross in the neighbourhood of an early date, and the place in which it was found affords tolerable evidence of the way of disposing of similar crosses at the time of the Reformation.

Suffolk Institute of Archæology.—This society proposes an excursion on Thursday the 11th of Augnst, starting from Halesworth, to visit Southwold and Blythburgh. Lord Arthur Hervey is the new president of the society, and the Committee, in a recent report, expresses its hope that under his lordship the members may be stimulated to fresh efforts to make the meetings and transactions of the Institute in some degree worthy of the earlier days of its existence.

British Archæological Society. — The annual congress of the British Archæological Society will commence on September 5 at Hereford, where the Black Friars, Coningsby Almshouses, and Hereford Cathedral are the leading antiquities. Excursions will be made to Kenchester (Magna) and Creden Hill, Kilpeck, Abbey Dore, Rowlestone, Grosmont Castle and Church, Leominster, Monkland and Stretford, Llanthony Abbey, Ledbury, Eastnor, Wall Hills, and the Herefordshire Beacon.

The Royal Historical and Archæological Association of Ireland is taking steps to preserve from fast-approaching destruction the famous remains of the church and round tower of Glendalough, County Wicklow.

S. SAVIOUR'S CHURCH (SOUTHWARK) STRUCK BY LIGHTNING.

During the violent thunderstorm that broke over the metropolis on Tuesday morning the lightning struck and carried away from its position nearly the whole of the south-east pinnacle of S. Saviour's Church, which fell across the choir and south transept, carrying with it in its descent the whole of the flying buttress of the choir, and finally sliding to the ground beneath—a distance of nearly 200ft. The tower of the church, which is 35ft. square and 150ft. high, is surmounted by four elegant pinnacles, each of which is 30ft. high and about 5ft. in circumference. These pinnacles are built, so to speak, round an iron pin or vane, 8in. thick, which is surmounted by a ball. The fluid first struck the ball and ran down the pin, driving the massive stonework asunder, particles of which were scattered for a distance of 160ft., severely damaging the roofs of the houses in the immediate neighbourhood. Escaping from this outlet it next seized the water-pipes running along the roofs of the eastern and western naves, and after traversing each till it reached 8ft. from the ground, it escaped, leaving the marks of its departure in the shape of two small holes. The stone finial immediately beneath the vane, of a globular shape, and weighing nearly a ton, fell into the churchyard, striking in its descent and almost destroying one the massive flying abutments over the roof of the lady chapel, and burying itself several inches in the stone pavement running through the churchyard. A large fragment broke through the roof of the transept, and came down with a tremendous crash at the foot of the famous monument to the poet Gower, founder of the Sutherland family.

A disaster not quite so serious in its character, but rendering complete restoration necessary, occurred to the south-west pinnacle of the same tower about twenty years since.

Mr. Jarvis, the parochial architect and surveyor, ascended to the summit of the tower on Tuesday, and has given the needful instructions for the removal of the wreck of the turret. Neither the admirable peal of bells nor the clock have suffered injury.

PARLIAMENTARY NOTES.

Water Supply in the East of London.—Mr. C. Reed, on the 21st inst., asked the Secretary of State for the Home Department whether his attention had been directed to the fact that great privation and suffering is caused at the present time by the diminution of the water supply in the east of London; and whether her Majesty's Government could give an assurance to the House that measures would be taken early next session to give effect to the recommendations of the Commissioners in reference to the supply of water in the metropolis.—Mr. Bruce said he had received no information of a deficient supply of water in the east end of London, and the only communication he had received on the subject was a letter from the secretary of the New River Company, stating that his attention having been drawn to a question of his hon. friend he had written to the East London Water Company offering assistance, and had received a reply that there had been no deficiency. With regard to the latter part of the question, the subject could be considered in connection with the larger question of the local government of London, when he hoped to give effect to the recommendations of the Commissioners.

The National Gallery.—Mr. Beresford Hope, on Monday, called the attention of the house to the present condition of matters relating to the plan for the enlargement of the National Gallery. The Government had provided him with papers which he did not ask for, and their production was calculated rather to embarrass and confuse an already complicated and entangled question. He complained that having asked for plans he had been hurried back to the competition between the designs of Mr. Barry and Mr. Murray. Neither of those designs was accepted, but one of those gentlemen was appointed, as a natural consequence of the report upon the competition, to prepare a design for the National Gallery—but not the one which had been said not to be fit for its object. An appointment having been made on certain conditions, the antecedent conditions had been produced in a mutilated form, which appeared to be depreciatory of the architect, and calculated to give the public an idea that the whole work was a sort of competition between Mr. Layard at Madrid, Mr. Barry, and Mr. Murray.—The Chancellor of the Exchequer announced that the Government had come to the conclusion that it would be possible to do something in the direction of the enlargement of the National Gallery during the present session, and a supplementary estimate would be laid before the house for that purpose in a few days.

Supply.—On the house going into committee of supply on the supplementary estimates, Mr. Ayrton moved that £10,170 be granted for alterations in rooms in the Houses of Parliament. The hon. gentleman explained in a detailed manner the alterations which were considered necessary, and said that a committee had recommended that the conference-room and some adjoining rooms should be converted into a principal refreshment-room, and that the present refreshment-room and its adjoining offices should be converted into tea and newspaper reading rooms. That adaptation of those rooms would, in his opinion, prove the best course that could be adopted. It had been suggested and recommended that part of the building should be pulled down, and a new refreshment-room be built; but he protested against the pulling down any portion of the building, his opinion being that it was better so to alter the internal accommodation to adapt the building to internal requirements without pulling down any portion of it and then building new rooms. By his plan the whole suite of rooms required would be under one roof, with most convenient communication between them for members. There was only one point more, and that was that he suggested that there should be a joint service for the refreshment-room, which the House of Lords declined, but they made certain suggestions which he thought unnecessary with respect to the refreshment-room of this house. He should have been glad if not a single stone of the outer walls was touched, but as the House of Lords had expressed a desire that there should be greater accommodation he thought the house would not object to the vote. He might mention also that the ladies' gallery was to be altered by giving them an additional room, and removing the grating which interrupted their view of the house. (Hear, hear.) An additional room was also to be provided for the reporters, who at present were subjected to great inconvenience and annoyance, being obliged to take their refreshments in a small and inconvenient room, in which they had to carry on their very useful duties. By the arrangement he proposed a convenient room would be allotted to them in which they might take their refreshments in comfort. There were minor improvements, among which was the cutting of the principal window in the smoking-room; so as to give members a view of the terrace, and if that was found to be a good arrangement, a further move in the same direction would be made. It was also proposed that there should be a better access to the strangers' refreshment-room, and a means by which the privacy of the members' lobby would be secured, while they would be enabled to communicate with gentlemen who wished to see them in another room. All these rooms would be *en suite*, so that there would be the greatest amount of accommodation given with the least trouble to members.—Mr. C. Bentinck criticised the plan of the right hon. gentleman, which he said was really based upon the acknowledged plans and suggestions of Mr. Barry, whose treatment by the right hon. gentleman had been so bad. The continuity of the corridor would be spoiled by a tavern bar, and the other peculiar features of the building would be destroyed, while the kitchen would be separated from the dining-room by a distance of 90ft. and dinner would be served without either light or air. In conclusion the hon. member moved to reduce the vote by £7160, the amount of the item for re-arranging the refreshment department.—Mr. B. Cochrane said he deprecated any arrangement which would look like ingratitude to the late Sir Charles Barry, and he saw no reason why the opinion pronounced on the question by his own son should be disregarded.—Mr. Cowper-Temple regretted that his right hon. friend had instituted a comparison between himself and Mr. Barry, with regard to matters of architecture. The scheme appeared to him very faulty, and especially as regarded the distance between the kitchen and the refreshment-room.—Lord J. Manners, while approving of the plan in some of its details, expressed his regret that the plan of Mr. Barry had been departed from.—Mr. W. H. Gregory protested against patchwork such as the proposed alterations indidated, and threw out a suggestion that the vote should be postponed until next session, when some general well-defined plan of alteration could be carefully considered and determined upon.—Colonel W. Patten thought postponement of the vote desirable.—Mr. Beresford Hope must distinctly state that Mr. Barry brought a scheme before them in relation to the refreshment-rooms, which was only postponed at the time by a position taken by the Lords. That plan would incur an outlay of £24,000, but the scheme if acted upon would have proved most satisfactory. With regard to the proposal of his right hon. friend, he must say that it would not hold water. As to the scheme before them now, it would, if agreed to, convert the portion of the house to which it referred into a most uncomfortable eating-house.—Mr. Ayrton, comparing the proposed plan with that of Mr. Barry, said the plan of that gentleman was that the refreshment-room would be 24ft. long, and that the service of refreshments would have to be carried the whole length of that room; while, by the present plan, the lift would be more convenient, and the service would be from the centre of the room.—Mr. Bentinck understood that Mr. Barry's plan would have furnished a room similar to that of the Reform Club, and hon. members who frequented that club could readily form an idea of what convenience the proposed room was likely to afford.—The amendment was negatived without a division, and the vote was agreed to.—A vote of £21,674 for the maintenance and repair of the Royal palaces was agreed to, as was also a vote of £80,437 for the maintenance of the Royal parks and pleasure grounds. The vote of £123,807 for the completion of public departments was next agreed to, as was also the vote of £11,700 for the supply of furniture for public departments.—On the vote of £22,387 for the completion of the buildings of the Houses of Parliament, Mr. Ayrton, in answer to several questions, said that a committee of artists had come to a unanimous conclusion that it was not desirable to continue the mosaic decorations of the central hall. The right hon. gentleman, in reply to Mr. Neville Grenville, said that it was intended to continue the plate-glass coverings over the frescoes in the central hall. The vote was then agreed to.—Votes of £12,500 for the purchase of land as sites for public offices near Downing-street, and £24,083 for the enlargement of public record depositories, were then proposed and agreed to.—On a vote of £6395 for the repairs and decorations of the Chapter-house at Westminster, Mr. Ayrton explained, in answer to Mr. Goldney, that that vote would complete the works up to a certain point, the roof and windows being finished, but without any attempt at decoration. The vote was agreed to.—£7067 was then voted for sheriffs' court-houses, Scotland ; £11,200 for the buildings connected with the University of London ; £13,250 for the new buildings connected with the University of Glasgow ; £6500 for the Industrial Museums, Edinburgh ; £5500 for the new works at Burlington House ; £101,245 for buildings connected with the Post Office and Inland Revenue ; £9344 for the maintenance and repair of the British Museum buildings ; and £40,752 for county-court buildings.—On the next vote, one of £80,170 for surveys in the United Kingdom, Mr. Stephenson said that it was desirable that there should be a larger sale of these maps, but they were little suited to the purposes for which they were most required.—Mr. Pell observed that in these surveys some districts appeared to be favoured. He thought some different principle might be adopted with a view to more uniform results.—Mr. Goldney, Mr. W. Hoskyns, and Mr. Miller also expressed themselves dissatisfied with the mode in which the survey was conducted.—Mr. Ayrton said there was no subject which gave so much trouble, on account of the different ideas that prevailed upon it at different times, as the survey. The expenditure upon it was at the rate of £140,000, and that continued during ten years would make an expenditure of about a million and a half of money. The vote, after some discussion, was agreed to.

PRACTICAL NOTES.

PROTECTING BRONZE FROM DISCOLOURATION.—The fact that in all large cities, especially where coal is burnt, bronze monuments quickly present a dirty, black appearance, has incited the Society for the Promotion of Mechanic Arts in Prussia to undertake some experiments looking towards a remedy. Analyses of ten bronzes, which were remarkable for their beautiful surface, showed that their constitutents varied too greatly to permit the composition of a bronze being taken as a cause of its retaining a proper surface or not. Attention having been drawn to the fact that those parts of public bronzes which were most handled retained a fine surface, it was surmised that the presence of fat might exert an influence. The surmise has been tested by exposing for some years a bronze which was daily rubbed with oil, the excess being removed by a rag, along with three others, one of which was daily cleansed with water, a second treated in the same way but twice during the year coated with oil, and a third was left untouched. The first was very beautiful, the third less so, the second had nothing of the beautiful surface, the last was dull and black. It is hoped that the discovery may enable us to preserve the statues in large cities bright.—*Journal of the Franklin Institute.*

GLYCERINE CEMENT.—Professor Hirzel, of Leipzig, has discovered an important use of glycerine that ought to be more generally known. He finds that when glycerine is mixed with fine and well-dried litharge it yields a cement that is capable of a large number of applications. All metals and nearly all solid bodies can be bound together by this cement; it is said to harden under water as readily as in the air, and to resist a temperature of 500°. It is especially recommended for such pieces of apparatus as are exposed to the action of chlorine ; hydrochloric acid, sulphuric acid, sulphurous acid, and nitric acid ; also the vapour of alcohol, ether, and bisulphide of carbon, as none of these agents act upon it. The cement can be used in steam engines, pumps, foundations for machinery, and, finally, as a substitute for plaster in galvano-plastic and electro-plating. The preparation of glycerine and litharge to be taken must depend somewhat upon the consistency of the cement, and its proposed uses. An excess of glycerine would retard the setting, as it does not readily evaporate. This new use of glycerine adds another application to a substance that only a few years ago was thrown away.

CHINESE GOLD LACQUER.—The gold lacquer lining of a Chinese cabinet, in the museum at Cassel, pealed off, and thus gave Dr. Wiederhold the opportunity of studying the composition of this substance. On examining it, he found particles of tin foil attached to the lacquer, so he comes to the conclusion that this material formed the ground upon which the laequer varnish was laid. His attempts to imitate the varnish were perfectly successful, and he gives the following directions for the preparation of a composition which closely resembles the true Chinese article. First of all, two parts of copal and one of shellac are to be melted together to form a perfectly fluid mixture, then two parts of good boiled oil, made hot, are to be added ; the vessel is then to be removed from the fire, and ten parts of oil of turpentine are to be gradually added. To give colour the addition is made of solution in turpentine of gum gutta for yellow, and dragon's blood for red. These are to be mixed in sufficient quantity to give the shade desired.

Building Intelligence.

CHURCHES AND CHAPELS.

BARTON PARVA, SUFFOLK.—A new organ chamber has been added to this church, from the designs, and under the superintendence of Mr. E. Swinfen Harris, architect, of London. Mr. William Edwards, of Mildenhall was the contractor.

BASINGSTOKE.—On the 10th inst., the little parish church at Church Oakley was reconsecrated by the Bishop of Winchester, after having been reconstructed, at a cost of £5000, from plans by Mr. T. H. Wyatt, architect.

BERMONDSEY.—The new church of S. Anne, Bermondsey, was consecrated on Thursday week by the Bishop of Winchester. The style of the building is that of about the end of the twelfth century. The interior is of plain brickwork, unplastered, with little decoration except bands and arches of red brick, and carved cap-heads. Externally the ends of the building are relieved by red brick arches and string-courses, with Bath stone dressings to angles and openings. There is a stone spire at the south west angle 60ft. high. The roof is open-timbered and stained, the height to the ridge being 42ft. The length of the building is 101ft., and the width 49ft., and it is capable of seating 700 persons. Mr. J. Porter, of Grange-road, Bermondsey, is the architect, Messrs. Browne and Robinson being the contractors. The cost has been £3000.

BRAEMAR.—The new church at Braemar, which was commenced about a year ago, was opened on Sunday last. The cost of the church and spire is about £2212. The building is in the Early English Gothic, cruciform in plan, with semi-circular apse, north and south transepts, north and west porches, and tower and spire. The tower and spire, which together rise to the height of 112ft., contain vestry and belfrey. The architect is Mr. Robert Lamb, of Darlington.

GOOLE.—The (Roman) Catholic chapel and schools of S. Thomas of Canterbury, Goole, Yorks, have been opened. The buildings are of a simple and unpretending design of Gothic character, and are built of grey stock bricks, with stone dressings and bands of black and red bricks sparingly introduced. A commodious house, adjacent to the schools, for the residence of the incumbent, is rapidly approaching completion. The works are being carried out by Mr. Elliott, of Goole, under the superintendence, and from the plans of Messrs. Hadfield and Son, the architects, of Sheffield. Mr. Cairns, of Leeds, is the clerk of works.

HORNSEA, NEAR HULL.—A new Wesleyan chapel has just been erected here. The building is Gothic, of red brick, with stone and moulded red brick dressings. The internal dimensions are 57ft. by 40ft., and accommodation is provided for 360 persons on the ground floor, provision being made for inserting a gallery at a future period. The pews are of varnished deal, without staining; the pulpit and communion are of pitch pine. The roof is open to one-half its height, showing the curved principals and the rafters. The acoustic properties of the building are perfect. The main entrance is by means of a porch, having three richly-moulded brick arches, carried by isolated circular columns having boldly-carved capitals. The total cost of the building, including a schoolroom 25ft. by 16ft., minister's vestry, two class-rooms, warming and lighting, &c., is about £1200. Mr. J. K. James, of Hull, is the architect, and Messrs. Barr, of Hornsea, are the contractors.

NORTHAM, SOUTHAMPTON.—The rebuilding of this church is contemplated. Plans have been prepared by the architects, Messrs. Guillaume and Parmenter of Southampton. The new structure will be in the Early Pointed style, of foreign treatment, and will comprise a nave, side aisles, chancel, organ chamber, vestry, and tower and spire. The church will accomodate about 800 people, and will cost about £5000. The site has been presented by T. Chamberlayne, Esq., of Cranbury Park, who has also subscribed £500 towards the building fund.

PECKHAM.—On Tuesday week the foundation stone of a new Baptist chapel was laid in James's-grove, Commercial-road, Peckham. The chapel will be a plain brick structure, without galleries, and capable of seating 400 persons. Beneath the chapel is a school. The only ornamental feature will be the entrance, which will be approached by a noble flight of steps, and is formed of two arches supported by pillars of Aberdeen granite, with ornamental caps. The pilasters will be of plain stone, and the roof of slate. Mr. Joseph Thompson, of Bedford-row, W.C., is the architect, and Mr. Joseph Mitchell, of Camberwell, the builder. The cost will be £1400.

BUILDINGS.

EAST GRINSTEAD.—A large portion of the Convent of S. Margaret, East Grinstead (illustrated in THE BUILDING NEWS for Dec. 18, 1868) was opened on Wednesday week. The building, so far as it has gone at present, forms three sides of a square, the middle portion of which, containing the chief entrance, only is completed. According to the designs, it appears that, at a cost of about £15,000, about one-half of the chief quadrangle is finished. Over the entrance in the centre of the western front is a life-sized stone crucifix, with S. Mary and S. John carved in high relief, by Mr. Earp, who also filled a niche below (at his own expense) with a figure of the patron saint. The south wing is formed, so far as it has reached already, by the refectory (now fitted up as a temporary chapel). Behind this are the domestic offices, comprising a very large kitchen, scullery, pantries, laundry, &c. The north wing has a number of sitting rooms on the ground floor, opening into a covered passage on the inside of the building, and above these are the sisters' cubicles. At the north-west corner are the school-rooms, class-rooms, oratory, &c. ; and in the west, or centre portion, the waiting-rooms, visitors' apartments, &c. The style of architecture is Early Second Pointed for the refectory, the remaining portion being Plain First Pointed. Mr. G. E. Street, A.R.A., is the architect, his services being given gratuitously.

LAISTER-DYKE.—On Saturday afternoon the foundation-stone of a new Sabbath school was laid at Laister-Dyke, Yorks. The building has been designed by Mr. G. S. Pickard, architect, will measure nineteen yards by twelve yards, and will accommodate 320 scholars. The total cost will be under £900.

NEWINGTON.—The question of enlarging Newington Workhouse is under consideration b the Guardians. Under an order from the Poor Law Board, an estimate has been obtained from Mr. Jarvis, architect, for the building of a new wing and other additions, to give accommodation to about 400 more inmates ; the cost of which would be about £18,000. A proposal has been made (but has not met with much favour), to erect an entirely new workhouse on land situate beyond Peckham Rye, at a cost of about £60,000.

SAVERNAKE.—We learn that the Marquis of Ailesbury is about to re-model a large number of dwellings on his lordship's estate at Savernake, in Wiltshire. Each cottage will contain a living room, scullery, and three bedrooms, with entrance porch pantry, woodhouse, piggery, privy, cesspit, and ashpit. Each dwelling will have a hard and soft water supply, with washing copper, pumps, sink, and a fire clay baking oven of an improved description. The living rooms will be fitted with ranges having ovens, and the bedrooms will have small cottage grates. Some of the dwellings will have all their bebrooms on the chamber floor, while in others one of the bedrooms will be arranged on the ground floor. The cottages will be built of a local red brick, made on his lordship's estates, relieved with dark grey bricks. The roofs will be covered with Staffordshire or Bridgwater tiles in bands and courses, finished with an ornamental crested ridge. The porches will have projecting roofs, supported on corbels and brackets, and the dormer windows will also have bold projecting roofs. The cottages will be erected in pairs and groups, affording altogether a pleasing and rustic appearance. The works will be carried out from the designs, and under the superintendence of Mr. John Birch, of Beaufort-buildings, London, whose designs it will be remembered, gained the Society of Arts' Prize Medal and Premium, and have been successfully carried out in many parts of the country.

Weymouth.—The foundations of new infant schools for the parish of Holy Trinity are being put in, and the foundation stone will soon be laid. The main part of the new building will contain about 1600 superficial feet, and to this is added at the north-west corner a wing enclosing about 400 square feet., thus providing accommodation for about 200 children. The style of architecture will be Gothic, Mr. G. R. Crickmay, of Weymouth, being the architect, and Messrs. Norman and Co. the contractors.

TO CORRESPONDENTS.

We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

Received.—Atom.—J. T. B.—C. S.—J. S.—G. H. S.—W. A. S.—W. W.—D. H. & Co.—M. L.—J. L.—J. Jones & Sons.—A. C.—Rev. E. H.—W. H.—J. N.—M. Bros.—W. & Co.—S. & J.—J. R. M.—T. W.—Enquirer—J. B.—B. P.—J. W. H.—T. R. S.—J. P. S.—W.B.

J. E. Ebdy.—With drawing of S. Paul's, Ryhope.
T. W. H.—Considered not suitable.
J. H. T.—Send the sketch.
J. N.—Thanks for the suggestion.

Correspondence.

PLAN-DRAWING BUILDERS.

(To the Editor of The Building News.)

Sir,—To those happy architects whose clients know good work from bad it matters nothing how many builders may set up as draughtsmen of plans. To some others, however, the subject is at times of consequence. There is always a section of the public ready to jump at whatever looks like a bargain, and so eager to save 5 per cent. in one quarter as to overlook the chance of losing 10 or 20 per cent. in another. To offer such people drawings gratis is to catch them at once; and when caught, it is difficult to pity them. A very little common sense would tell them what to expect when a builder offers to find them plans for nothing if they will only let him do his work without inspection. The proposal speaks for itself; and in many cases I believe these complaints about architects' conduct are a mere pretext for putting it forward with a better grace. To the scamping builder the architect is a natural enemy, and *his* abuse is the highest praise. Some dishonest men there doubtless are in the architectural profession, and considering that it is a perfectly open one, it would be something more than a miracle if there were not. The question is, why do not builders expose them? It is they who have the proofs of their misconduct, and it is they as well as the public who suffer by it. To get rid of such men would be doing the best service to honest people in both classes. One has heard of architects who gain a high reputation for liberality by preparing plans gratis for public buildings of a certain sort. They charge their clients ostensibly nothing; their bills of quantities, however, cost from 3½ up even to 7 per cent; they have a commission on goods supplied, and perhaps another commission from the builder. But one has also heard of contractors, equally acute and devout, grasping all the work connected with some large religious body, intriguing for the architect's removal, executing the work (out of pure love of the truth) some hundreds of pounds dearer than respectable firms would have done it for in similar fashion,—and at last being thanked for it all in print, in terms that might make Mephistopheles blush. Is it not possible for upright men, whether architects or builders, to join in clearing away some of this cant and jobbery which disgrace a certain stratum of both professions?—I am Sir, &c.,

Candide.

GUGLIELMO DA CASTELBARCO.

Sir,—The circumstance that Mr. Redford's drawing of the tomb of Guglielmo da Castelbarco should appear in The Building News on the same day that my notice of it was published in the *Athenæum* is remarkable. It would almost seem to have been designedly intended, and induces me to send you some further particulars of that eminent individual whom the monument commemorates.

Guglielmo da Castelbarco, the Lord of Lizzana, combined in his character many qualities which are rarely found united; he was an able ruler, a wise governor, a clever politician guided by principles of justice and the consideration which is due to everyone; in his manner he was extremely courteous and polished, and by these means often succeeded in difficult and delicate negotiations, which, in the hands of one less solicitious not to wound the personal feelings of the parties concerned, would have collapsed to his own confusion. He was also a very benevolent and charitable man; his munificence was princely, his piety exemplary. Verona had every reason to be proud of him, and to place his monument where it might be conspicuously seen by all her citizens.

It was in 1307 that Guglielmo da Castelbarco began to build, on the ruins of the palace of the Count di S. Bonifazio, the splendid church of S. Anastasia, and the convent at the side. In 1313 he commenced rebuilding the church dedicated to the Saints Fermo and Rustico, along with the monastery adjoining. In 1317 the works at S. Anastasia, which had been for a short time suspended for want of funds, were again proceeded with, the completion of this church being one of the three things, which, according to the Veronese historian Girolamo dalla Conte, who flourished in the sixteenth century, Guglielmo da Castelbarco had most at heart. The two others were, the completion of the new church of the Saints Fermo and Rustico, and his own repentance before God for his sins. Castelbarco resided alternately at Verona, to which he was attached by many friendships, and his castle of Lizzana in the Val Lagarina, where, in his own right, he ruled the territory around. It was here, in 1319, that he dictated his last will and testament, in which, among the many legacies to the poor and the churches, Verona came in for a considerable share. In the following year, on the 6th of January, he died, and his body, as he had directed, was transported from Lizzana to Verona for interment in S. Anastasia. Can Grande, who then swayed the destinies of fair Verona, followed the remains of his friend to the grave, accompanied by the Podesta, and all the cavaliers and persons of distinction in the city and neighbourhood, and there was a general mourning for him among all the people, for Guglielmo da Castelbarco had been universally beloved. The intimate friendship of such a man speaks well for the rulers of Verona, and his sympathy for Dante Allighieri sheds an additional lustre on his name. I am, &c. H. C. Barlow.

Newington Butts, Surrey,
July 25th, 1870.

SHARP PRACTICE.

Sir,—A gentleman sent for me about some work he wanted doing. He told me the way he thought of having it done; I told him it would not be right to do it so. He then said "Which way would you do it? I told him, and he said "You are right; make out a specification and tell me what you will do it for." I did so. He then got other tenders, which, I suppose, were less than mine, and he had the work done just as I had written it down in my specification, I want to know if any of your numerous readers can tell me if I can get any recompense for my trouble?—Yours, &c.,

Manchester. J. B.

"BUILDERS' DRAWING PLANS."

Sir,—I was much pleased at seeing in your paper a letter signed "An Old Subscriber," and think that your correspondent "Builder" does not understand the meaning of the letter. We do not for one moment wish builders to tender low for work; on the contrary, "honest architects" will do all they can to advise their clients not to accept the lowest tender. But we do certainly require some kind of protection against joiners and stonemasons being architects. What is the use of parents paying for their sons to learn a profession that is cut up by builders pretending to be their own architects? I would suggest that all "honest archicects, I trust there are many in this town—should agree that on no account shall "builders" be allowed to tender for their work when it is known that they draw plans. I am sure that builders would find it better for themselves, as also would the proprietor. I never heard of builders buying their own certificates before. Surely "Builder" means the "joiners and stonemasons," who do a lot of business in a very careless way?—Yours, &c.,

One who Can Produce His Indentures.

Hull, July 26, 1870.

Intercommunication.

QUESTIONS.

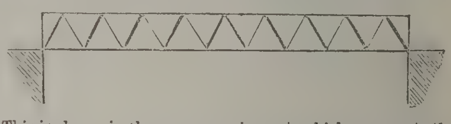
[1902]—SURVEYOR OF TAXES—Can any reader of The Building News inform me what are the qualifications necessary to secure the post of surveyor of taxes? Also, are the Civil Service Commissioners the examining body?—Assistant.

[1903.]—HOT OR COLD BATH.—Can any reader give me information on the following points? 1st. What means could I adopt in order to get hot water from a wash-house copper (on the ground floor) to a bath (on the first floor), without carrying it? Will a pump answer the purpose? If so, what sort, size, and price? I have an idea that hot liquids cannot be pumped, as they would injure the pumps; is this idea correct, and if so, what other expedient can I adopt? If, however, hot water can be pumped, I presume that the same pump will also serve to pump up cold water from the butt? 2nd. Would india-rubber or gutta-percha tubing answer? Any information on these points would oblige.—A Handy Man.

[1904.]—TESTING PORTLAND CEMENT.—Will any one inform me what simple apparatus can be had for testing the quality of Portland cement; whether the instrument used by the engineer to the Main Drainage works is the best, and if so, where can such a one be purchased?—Wiltshire.

REPLIES.

[1897.]—GIRDERS.—A "Warren" girder is so called from its inventor and patentee, Captain Warren. As it has undergone many changes since its first introduction, a brief notice of its distinguishing characteristics will be of service to your correspondent. It is distinguished from the lattice type by having only one series of triangles in the web or side.



This is shown in the accompanying cut, which represents the elevation of a Warren girder. The first Warren girders had the compressive bars, which are shown in the cut by thick lines, made of cast iron, but the failure of one or two examples induced engineers to abolish the use of cast iron in these bars, and make them of wrought iron. There are two other points in which these girders differ from lattice ones; one is, that the angle of the sloping bars with the horizon is sixty degrees, and the other, that the bars are united to the flanges by pins instead of rivets. The Warren girder is always taken as the primitive type in calculating the strains upon either a lattice or braced girder of any description.—Design.

[1898.]—RECLAMATION BANKS.—"Contractor" may be assured that there is no "fancy" in the matter at all. The sea slope of every reclamation bank is always made flatter than that upon the land side; the reason is quite clear. It is upon the outer or sea slope that the water exerts its destructive force, and it is there that the flatter inclination is required. "Contractor" need not think 3 to 1 very flat for the outside slopes, for they are frequently made 6 to 1, and sometimes 12 to 1. It all depends upon the force of the sea and the nature of the material of which the bank is composed.—L. M. P.

[1899.]—BOOKS ON HARBOURS.—The only really good work on harbours is a book by Sir John Rennie, but the price is very high. The plates are exceedingly well executed. Try at Spon's.—V. S.

[1900.]—STONE DUST IN MORTAR.—If "G. J. C. C." is carrying out any extensive works, or even any works that he is desirous of having built in the best possible manner, and with the best materials, he should engage a strict and honest clerk of works; it would be his duty to see that the work was properly done, and that no inferior or defective materials of any kind were used. By this means "G. J. C. C." ought to get rid of the anxiety caused by suspicion of his builder's honesty in trade.—J. W. R.

[1901.]—ARCHITECTURAL PERSPECTIVE.—The most thorough work on perspective, is Malton's, and one of the worst is Mr. Ruskin's. Probably the "Rudimentary Perspective," published by Weale, will give Mr. Moore all that he may require. Remembering the difficulty I met with in my younger days, in mastering perspective from books, I shall be happy to give Mr. Moore an oral explanation (*con amore*) of the mysteries of perspective practice, if he will give me a call. My address can be obtained of the Editor of The Building News.—P. E. M.

STAINED GLASS.

BLOXWORTH.—The east window of Bloxworth Church, Dorsetshire, has just been filled with stained glass by Messrs. Heaton, Butler, and Bayne, of London, the subject being the Resurrection. The window is divided into three compartments, the central one, containing a nearly life-sized figure of our Saviour, with the Roman guards lying beneath, and on either side the Virgin Mary and the women who first came to the sepulchre. Some stained glass bordering has also been introduced into the side windows.

THE FAIRFORD WINDOWS.—A series of tracings, carefully coloured, from the stained glass windows of Fairford Church, are in course of being placed in the South Kensington Museum.

S. MARY THE VIRGIN, WOLVERTON, BUCKS.—A new two-light stained glass window has just been inserted in this Church. The subject is "The Anunciation," and it has been very ably treated by the artists, Messrs. Bell and Almond, of London.

◆

WATER SUPPLY AND SANITARY MATTERS.

THE DISINFECTION OF SEWERS.—Dr. Stevenson, the St. Pancras Medical Officer of Health, reports to his Vestry that several cases of enteric fever have occurred in the neighbourhood of the old Fleet sewer, Gray's-inn-road. He has urged, he says, upon the Metropolitan Board of Works the proper disinfection of the main line of sewers from which offensive effluvia have of late been sent forth. Dr. Stevenson's representation touches us very closely, for beneath the windows of the office of this journal are sewer openings which all through the hot weather have been emitting the most nauseating and dangerous effluvia. We (*Lancet*) have brought the matter under the notice of the district health officer, but without the slightest appreciable effect, and we have nothing left us therefore but to echo Dr. Stevenson's call for such measures of disinfection as shall prevent our sewers from poisoning us outright. We do not hesitate to say that a very heavy responsibility will rest on the Metropolitan Board of Works in respect of those great works of theirs beneath our feet should any epidemic disease break out in London that may either originate with, or be aggravated by, the unwholesome condition of the sewers.

DONCASTER.—The corporation of Doncaster are threatened with an injunction by the River Don Navigation Company, if they continue to cast the town's sewage into the river Don; and last week a conference was held at the Mansion House, between certain of the directors and a committee of the Council, as to the best method of carrying the sewage forward to the Corporation estate at Sandall, and there applying it to the irrigation of the land.

◆

Our Office Table.

BUILDING UNDER DIFFICULTIES.—A writer in the *South London Press* vouches for the truth of the following story, which is certainly one of unswerving perseverance. About four years ago an eccentric personage, who follows the pursuit of bird-catching, purchased a small plot of land on the eastern side of Nunhead Cemetery. Here he resolved to build a good-sized six-roomed brick house with his own hands. He at once set to work, and has now nearly finished his task. He has been his own architect, bricklayer, labourer, joiner, plumber, and glazier, and, what is still more strange, built the house without a particle of scaffolding, and even carried his own bricks from the maker's by the armful, as he was able to afford them. The work appears to be very substantial, and does him great credit. During the operations he has been living in a small brick hut built by himself on the plot at the onset.

A DAY IN THE COUNTRY.—The workmen employed upon the extensive alterations and additions at S. Audries, the seat of Sir A. A. Hood, Bart., were invited by their employer, Mr. H. Davis, of Taunton, to a day's excursion to Minehead on Tuesday, the 19th inst., to which pleasant watering-place they were conveyed in breaks, omnibuses, &c. After strolling along the beach for some time, the men, together with some friends connected with the works and estate, sat down to a good and substantial dinner, provided by Messrs. Fry and Langdon, of Williton. At the request of the company, Mr. Griffiths, the clerk of the works, occupied the chair. The toasts of the Queen and Royal Family, Sir A. A. Hood, Sir Peregrine Acland, Mr. Norton, the architect, Mr. Davis, the contractor, Mr. Griffiths, the clerk of the works, Mr. Marrs, the general foreman, &c., were succesively proposed and very heartily responded to. After enjoying themselves thoroughly, they returned at a reasonable hour safely to Williton, wishing each other many happy returns of the day, and success to their next merry meeting.

FIRE ESCAPES.—As we have frequently predicted would be the case, another terrible tragedy has occurred, owing to the utter inefficiency of our arrangements for saving the lives of persons who find themselves suddenly in a burning house. Six little children were burnt to death on Saturday morning in Waterloo-road, within a few yards of the fire-brigade station. This circumstance alone (says the *Pall Mall Gazette*) shows the necessity of attempts being made to devise and enforce the adoption of some more efficacious means for the preservation of life than those at present organised. If the fire brigade are unable to save the lives of their next-door neighbours on the occasion of a fire, our present system must be akin to a mockery and a sham. It would be far better to have balconies in front of every window in every house in London than that scenes should be enacted such as that which horrified the spectators on Saturday last.

A STINKING TOWN.—During the hearing of a case at the present Stafford assizes, in which one of the items in dispute was a claim for sewering several houses erected by the plaintiff in the town of Hanley, it was remarked that there was no public sewerage in that town.—Mr. Justice Mellor (to the plaintiff): If you had meant this town I could have understood, for it is the most stinking town I was ever in in my life. The sewage is allowed to flow down the streets, and one cannot walk out a dozen yards without meeting with smells of the most virulent kind.—Mr. Huddlestone: And yet strange to say it is the only town which was not visited with cholera, and it is the healthiest town on circuit.—Mr. Justice Mellor: Then I suppose what offends our noses does not affect our health. If the town was sewered the inhabitants would probably miss some favourite smell. (Laughter.)—Mr. Huddleston: That throws discredit on all sanitary movements.

INDUSTRIAL ART IN WOLVERHAMPTON.—Whilst Birmingham is exerting itself, with proverbial energy, to improve the technical education of the artisans and of the general public by establishing an Art Museum, Wolverhampton has just had the cultivation of art in the town and district retarded by the action of its Town Council. A collection of the productions of a country in which art has been fostered for thousands of years would be of much use to those staple trades of the locality in which artistic ornamentation is an important matter. The Government thought so, and asked Wolverhampton if it would take one of the fifty more of the valuable collections of the textile manufactures of India which are now being sent out. The collection consists of 1000 specimens of fine art work, and photographic and chromo-lithographic plates of the patterns of four hundred of the specimens. A committee of the Town Council recommended that a part of the above collection should be purchased by the Corporotion and placed in the Free Library, where they considered that it would meet with more observation than if it was bought and kept by the School of Art. The proposal was rejected, on the ground that only one portion of the artisans of the town—the japanners—would be benefited by it, and that, therefore, it was not for the Corporation to take the matter up. But it has been justly inquired (says a correspondent) "Is there no room for art decoration in the manufacture of locks and keys"; and "Have chandeliers attained the *ultima thule* of decorative excellence?" Further, the opponents of the proposition seem to have pretty much ignored the fact that it is as important to cultivate a taste for art work in the minds of the general public, who are the purchasers, as in those of the artisans, who are the producers.

PAYMENT FOR EXTRAS.—At the last meeting of the Poplar Board of Guardians, a letter was read from Messrs. Baker, Nairne, and Oxley, solicitors, in reply to one from the clerk to the Guardians, with reference to the payment by the Board for the extra charges by the contractors for the erection of the new workhouse buildings. The questions submitted by the Board were whether, under the specification, they were compelled to pay 75 per cent. upon the "extras" before the completion of the work; and secondly, whether, if they did so, it would prejudice such matters as might be brought under arbitration? The reply of the solicitors was to the effect that under clause 9 of the agreement the Guardians were bound to pay 75 per cent. of the cost of such work only as was mentioned in the contract, and they could not be called upon to pay for extra work until the building was fully and satisfactorily completed. The Guardians, therefore, were not bound to pay £2000, notwithstanding a certificate for that amount had been given by Mr. Morris, their surveyor. If, however, the Guardians determined to pay, the letter recommended that a receipt should be required in such a form as would reserve to each party the same rights with regard to arbitration upon the matter of any particmlar extra as existed before payment.

Chips.

The corner stone of new Wesleyan schools for Bolton, to cost £5000, will shortly be laid.

A new (Roman) Catholic schoolhouse is being erected at Cowgate, Edinburgh, from the designs of Mr. R. Anderson, at a cost of £1600.

A new infirmary is about to be erected in connection with the Freemen's Orphan School, at Brixton, at an estimated cost of £833.

S. Luke's Church, Lower Norwood, is about to be repaired and re-modelled, at a cost of upwards of £3000.

Messrs. Hopkins, Gilkes and Co., have accepted a tender for building a large viaduct for a branch of the North Eastern Railway system.

The last girder of the Sutlej bridge was hoisted on the 13th inst., completing the communication between Lahore and Calcutta.

Now that the high level bridge scheme is abandoned, it is expected that a strong effort will be made in the next session of Parliament to obtain the necessary powers for constructing a tunnel under the Severn at New Passage.

The Antwerp Exhibition will open on the 14th of next month, and close on October 2.

A house that has just been built in New York, with all the modern improvements, has a billiard table in the basement, a bowling alley in the cellar, and a croquet-ground beautifully fitted up in the attic!

The clock in the new Meat Market, Smithfield (central roadway) being completed, and several makers names mentioned in connection therewith, we beg to say the makers were Thwaites and Reed.

The opening of the new Dorset County School Buildings at Burton, will take place on August 8.

The foundation stone of a new Wesleyan chapel, at Shepherdswell, Kent, was laid on Wednesday week, by the Rev. Dr. Knowles, F.S.A.

The committee of judges for selecting pictures and decorative pictorial art at the International Exhibition next year is now completely named. It consists of Messrs. Elmore, R.A., Marks, A. Hunt, H. Warren, and Dillon, oil and water-colour painting; with Messrs. Redgrave, R.A. and Morris for decorative painting in general. With them are associated Lord Bury, Lord Elcho, and Sir Coutts Lindsay.

◆

Timber Trade Review.

Messrs Churchill and Sim's sale on the 27th was a very important one, as there was a great variety of wood offered, and builders will be anxious to learn the state of the market so soon after the declaration of war.

The following were the principal parcels on sale:—

15,800	Spruce deals, &c.
48,800	Quebec pine deals, &c.
9600	S. Petersburg deals and battens.
56,000	Swedish deals and battens.
6000	Finland deals and battens.
400	Pitch pine planks.
180,000	Prepared flooring and match boards.
2600	Fresh Norway spars and poles.
110	Fathoms lathwood.
320	Loads Quebec yellow pine timber.
200	Loads Quebec red pine timber.
2500	Loads Dantzic fir timber.
	&c., &c.

Prices ruled as follows:—

		£	s		£	s
Abo 1st yellow	per Petg. std.	7	5	to	8	5
		s	d		s	d
Bengo handspikes	per dozen	2	6	to	2	9
		£	s		£	s
Bjorneborg yellow	per Petg. std.	6	0	to	6	5
Christiana 1st yellow 3 × 9	per 120 12ft.	18	10			
Ditto 2nd yellow 2½ × 6½	Ditto	7	5	,,	7	10
Ditto 3rd yellow 2½ × 6½	Ditto	5	5	,,	7	0
Ditto 1st white 3 × 9	Ditto	16	10	,,	17	15
Ditto mixed white 3 × 9	Ditto					
Ditto 3rd white 2½ × 6½	Ditto	6	5			
			d			
Ditto spars 4in. to 6in.	per ft. run	0	1			
		£	s		£	s
Calmar yellow	per Petg. std.	7	15			
Ditto lathwood	per cbc. fm.	5	5			
Drontheim 1st white	per Petg. std.	6	10			
Ditto 2nd ditto	Ditto	5	0	,,	5	15
Ditto 3rd ditto	Ditto	5	5			
Dram 1st yellow 2½ × 6½	per 120 12ft.	5	10	,,	6	5
Ditto 2nd ditto 2½ × 6½	Ditto	7	5			
Ditto 3rd ditto 2½ × 6½	Ditto	6	10			
Dram 1st white 2½ × 6½	Ditto	5	0	,,	5	10
Ditto 2nd ditto 2½ × 6½	Ditto	6	0			
Ditto 3rd ditto 2½ × 6½	Ditto	5	5	,,	5	10
Dantzic lathwood	per cbc. fm.	3	15			
		s	d		s	d
Ditto common middling timber	per load	55	0	,,	57	0
Ditto 1st middling	Ditto	67	0	,,	77	0
Ditto good middling	Ditto	55	0	,,	66	0
Ditto 2nd middling	Ditto	57	0			
		£	s		£	s
Gothenburg mixed white	per Petg. std.	8	0			
Ditto 3rd white	Ditto	7	0			
Georgia pitch pine	Ditto	12	0			
Husum mixed yellow	Ditto	9	0	,,	10	5
Holmsund mixed yellow	Ditto	8	15	,,	10	0
Pugwash spruce 3 × 9	per 120 12ft.	11	15	,,	12	5
Petersburg lathwood	per cbc. fm.	6	0	,,	6	10
Ditto Gromoffs 1st yellow	per Petg. std.	12	10	,,	14	5
Quebec 1st bright yellow pine	Ditto	16	0	,,	18	15
Ditto 1st dry bright	Ditto	15	10	,,	16	10

Ditto 1st floated	Ditto	16	0			
Ditto 1st dry floated	Ditto	17	0			
Ditto 2nd bright	Ditto	13	10			
Ditto 2nd floated	Ditto	12	0			
Ditto 2nd dry floated	Ditto	12	10			
Ditto 3rd bright	Ditto	8	15	to	9	0
		s	d		s	d
Ditto red pine	per load	77	6			
Ditto yellow pine	Ditto	82	6	,,	85	0
Ditto waney yellow pine	Ditto	80	bought in			
		£	s		£	s
Stockvikan mixed yellow	per Petg. std.	9	10			
Ditto 2nd yellow	Ditto	8	0	to	9	10
Ditto 3rd yellow		8	15	,,	9	0
Ditto mixed white	Ditto	8	5	,,	8	10
Ditto 3rd white	Ditto	7	15			
Sederham 3rd yellow	Ditto	9	5	,,	9	5
Schien 3rd yellow 3 × 9	per 120 12ft.	10	0			
Ditto mixed yellow	per Petg. std.	7	10	,,	7	15
St. John's 1st spruce	per 120 12ft. 3 × 9	14	5	,,	14	10
Ditto 2nd ditto	Ditto	13	10			
Ditto 3rd ditto	Ditto	12	10			
Swartwick 3rd yellow	Ditto	8	0	,,	9	10
Ditto mixed yellow	Ditto	9	5	,,	10	10
		s	d		s	d
Sundswall yellow balks	per load	39	0	,,	40	0
Sellefted yellow balks	Ditto	34	0	,,	35	0
		£	s		£	s
Tonsberg 2nd yellow, 2½ × 6½	per 120 12ft.	6	10			
Ditto 2nd white, 2½ × 6½	Ditto	6	0			
Aldevalla mixed yellow	per Petg. std.	8	15	,,	9	0
Ditto 3rd yellow	Ditto	8	10			
Wyburg 1st yellow	Ditto	10	0			
Ditto 2nd yellow	Ditto	8	5			
Dittó lathwood	per cbc. fm.	4	0			
Prepared flooring boards.						
		s	d		s	d
Dram 1st white ⅞	per square	7	6			
Ditto 1st yellow ⅞	Ditto	7	9			
Tonsberg 1st yellow, 1¼	Ditto	12	9			
Ditto 1st white, 1¼	Ditto	10	9			
Gothenburg 1st yellow, 1¼	Ditto	12	0			
Ditto 1st white, ¾	Ditto	6	9			
Frederickstadt 1st yellow, 1¼	Ditto	12	9	,,	13	6
Ditto do 1	Ditto	11	3			
Ditto do ¾	Ditto	7	3			
Ditto do ⅞	Ditto	8	3			
Ditto, 1st white ⅞	Ditto	8	6			
Ditto, do ¾	Ditto	7	6			
Christiana 1st yellow, ⅞	Ditto	8	3	,,	8	6
Ditto, 2nd do, ⅞	Ditto	8	3			
Frederickshald 1st white, ⅝	Ditto	8	3			
Ditto, do, grooved and tongued, ⅞	Ditto	7	6			

Messrs. Churchill and Sim's next public sale will take place on the 10th August, with the usual assortment of deals, battens, timber, &c. Much of the Dantzig timber was withdrawn, as no doubt better prices can be obtained for the full-sized descriptions. Altogether, there was a marked advance in the prices of Baltic goods, and a crowded room gave evidence of the anxiety to know the result of the sale. The price of Petersburg goods has advanced considerably, and the brokers did not seem at all anxious to force the sale. On the other hand, consumers did not seem more than usually anxious to bid, and probably until prices are more settled, will buy just for immediate consumption, until events on the Continent are more advanced. Whether such a course is judicious is a question upon which hardly any two consumers of wood agree.

LATEST PRICES OF MATERIALS USED IN CONSTRUCTION.

TIMBER.

	£	s.	£	s.
Teak load	12	0	13	0
Quebec, red pine	3	15	4	15
,, yellow pine	4	0	4	15
St. John, N.B. yellow	0	0	0	0
Quebec oak	5	15	6	5
,, birch	3	15	5	0
,, elm	4	5	5	5
Dantzic oak	4	5	6	0
,, fir	2	5	4	5
Memel fir	2	10	3	15
Riga	2	17	3	2
Swedish	2	0	2	13
Masts, Queb. red pine	3	10	5	5
,, yellow pine	3	10	5	5
Lathwood, Dant. fm.	3	15	5	10
,, St P'burg.	5	10	6	10
Deals, pr C., 12ft by 3 by 9 in.				
Quebec, white spruce	12	0	17	0
St. John, white spruce	12	10	14	0
Yellow pine, per reduced C.				
Canada, 1st quality	16	0	17	0
2nd do	12	0	12	10
Archangel, yellow	11	0	12	0
St. Petersburg, yel.	11	0	12	0

	£	s.	£	s.
Finland	7	0	8	0
Memel	7	0	9	0
Gothenburg, yellow	9	0	10	0
,, white	8	0	9	0
Gefle, yellow	10	0	11	10
Soderham	8	0	9	10
Christiania, per C., 12 ft. by 3 by 9 in yellow	10	0	12	10
Flooring Boards, per sq. of 1in., first yel.	7	6	10	6
First white	7	0	9	6
Second qualities	6	0	7	0
PUMICE STONE pr tn	6	0	8	0
OILS, &c.				
Seal, pale pr tun	38	0	0	0
Sperm body	86	0	87	0
Cod	40	0	C	0
Whale, Sth Sea, pale	37	10	38	0
Olive, Gallipoli	51	0	0	0
Cocoanut, Cochin, tun	44	0	45	0
Palm, fine	39	10	0	0
Linseed	31	10	31	15
Rapeseed, Eng. pale	44	10	45	0
Cottonseed	29	0	35	0

METALS.

LEAD :—							
Pig, Foreign	per ton	17	12	6	17	15	0
,, English, W.B.	do.	19	5	0	0	0	0
,, Lead Co.	do.	18	12	6	18	15	0
,, Other brands	do.	18	0	0	18	5	0
Sheet Milled	do.	18	10	0	0	0	0
Shot, Patent	do.	21	0	0	0	0	0
Red or minium	do.	19	15	0	20	10	0
Litharge, WB	do.	0	0	0	0	0	0
White dry	do.	25	0	0	30	0	0
,, ground in oil	do.	0	0	0	0	0	0
COPPER :—							
British—cake and ingot	per ton	71	0	0	72	10	0
Best Selected	do.	72	0	0	72	10	0
Sheet	do.	76	0	0	78	0	0
Bottoms	do.	80	0	0	0	0	0
Australian	do.	73	10	0	75	0	0
Spanish Cake		0	0	0	0	0	0
Chili Bars	cash	65	10	0	67	10	0
,, refined ingot		71	0	0	73	10	0
Metal Sheathing & Rods	per lb.	0	0	6⅝	0	0	6¾

BATH STONE OF BEST QUALITY.

RANDELL, SAUNDERS, and COMPANY, LIMITED. Quarrymen and Stone Merchants, Bath. List of Prices at the Quarries and Depôts; also Cost for Transit to any part of the United Kingdom, furnished on application to

BATH STONE OFFICE,
Corsham, Wilts.

ADVT.]

Trade News,

◆

TENDERS.

KENT.—For the Kent County Constabulary. Mr. Martin Bulmer, County Surveyor. Quantities by Mr. Geo. Ruck:—

Police Station, Canterbury.

Denne Brothers	£2490	0
Richardson	2484	0
Gaskin and Godden	2480	0
Judges	2470	0
Shrubsole	2448	0
Sollitt	2445	0
Wilson	2429	0
Naylar	2390	0
Adcock and Rees	2385	0
Epps	2354	10
Cozens Brothers	2346	0
Matthews (accepted)	2160	0

Addition to Sittingbourne Police Station.

Tozer	520	0
Dowel, Dover, and Co.	505	0
Sollitt	470	0
Epps	419	10
Shrubsole (accepted)	419	0

Maidstone Prisons.—New Cook House, Bakehouse, &c.

Dowel, Dover and Co.	1933
Vaughan	1680
Avard and Abnett	1590
Bridge	1587
Clements and Wallis	1560
Anscomb (accepted)	1510

LONDON.—For painting, &c., at Christ's Hospital:—

Hayward and Son	£939	18	6
Pritchard	914	18	0
Patman and Co.	875	0	0
Shaw	854	0	0
Richardson	852	0	0
Morby	815	0	0
Pitman and Cuthbertson (accepted)	789	0	0

LONDON.—For limewhiting, painting, &c., infirmary at St. Marylebone workhouse. Mr. H. Saxon Snell, architect.

Manley & Rogers	£313
Clarke & Mannoch	267
Bamford & Son	230
Simpson	200
Phillips & Son	197
Longmire & Burge	188

LONDON.—For repairs, &c., at No. 97, Old-street, St. Luke's, for the Holborn Board of Guardians. Mr. H. Saxon Snell, architect:—

Perry Bros.	£247	0
Cutler	187	10
Devereux & Son	169	0
Bamford & Son	155	0
Sabey	152	0
Starkey	149	10

LONDON.—For alterations and repairs at No. 72, Baker-street. Mr. H. Saxon Snell, architect:—

Simpson	£222	0
Phillips & Baker	213	5
Stanley Bird	201	10
Bamford & Son	201	0
Howard	197	10

LONDON.—For alterations and repairs at Greville House, Kilburn. Mr. H. Saxon Snell, architect:—

Green & King	£716
Phillips & Baker	680
Manley & Rogers	674
Stanley Bird	648
Smith	615
Howard	595
Crabbe & Vaughan (received too late)	593

LONDON.—For proposed works at Tonbridge Chapel, Euston-road. Mr. G. Judge, jun., architect. Quantities by Messrs. Curtis & Son:—

Cave	£1064	2
Conder	968	0
Axford	961	0
Roberts	930	0
Hebb	918	0

RICKMANSWORTH.—For Croxley Church. John Norton, architect, 24, Old Bond-street, W. Quantities by Mr. Thacker, 22, Montague-street, Russell-square:—

Gibson Brothers	£2999	9
Chappell	2953	0
Wood	2900	0
Nightengale	2853	0
Wall & Hook	2850	0
G. & J. Waterman	2849	0
Diment	2819	0
Price	2817	0
Coney & Mann	2785	0
Hookham	2750	0
Bowier	2607	0
Holland	2271	0
Clarke	2228	13

◆

USEFUL NOTES.

CALCIUM LIGHTS ON CAISSONS.—Mr. W. Milner Roberts, who is in charge of the work at the S. Louis bridge, says:—"We have used calcium lights only for our open-air work in laying masonry on the top of our caissons, one light on one side, and one on the other, on diagonal corners; we found that they distributed the best light when thus placed. We had the oxygen gas forced into copper gas-holders, with a pressure of about 200lb. to the square inch. These were carried over from the city to the piers on a little steamer, and the gas was conveyed to the burner through a small lead pipe. At first our reflectors were of glass, but so many were broken that they were replaced by metal. A man remained with the two burners through the night to regulate them occasionally, and to mend the pipes when a burst occurred. They usually burn from eleven to twelve hours; and, with the aid of some movable large reflector lamps, the masons worked as well at night as in the day. The cost of the calcium lights to our company was 3dol. 75c. per hour each."

CONTRACTS OPEN FOR BUILDING ESTIMATES.

DENTON (Staffordshire), Aug. 4.—1st. For the erection of a new south wing, for S. Chad's College. 2nd. For the erection and completion of kitchen, laundry, gas house, and offices. Architects, Mr. W. Slater and Mr. R, H. Carpenter, 4, Carlton Chambers, 4, Regent-street, London, S.W.

COASTGUARD CONTRACT, Aug. 9.—For the erection of a coastguard station, at Johnshaven, in the county of Kincardine, Scotland. Director of Works Department, Admiralty, Spring Garden-terrace, London, S.W.

ROYAL SOUTH LINCOLN MILITIA, Aug. 4.—For the erection at Harrowby, near Grantham, in the county of Lincoln, of twenty sergeants' quarters, an adjutant's house, and other buildings, for the use of the Royal South Lincoln Militia. Fred Burton, Clerk of Gaol Sessions, Lincoln.

LANCASHIRE AND YORKSHIRE RAILWAY, Aug. 16.—For the construction of a branch railway, from North Dean to Stainland, length about 1¾ miles. Wm. S. Lawn, Secretary, Hunt's Bank, Manchester.

ROTHERHAM AND KIMBERWORTH LOCAL BOARD WATERWORKS, Aug. 16.—For the construction of a storage reservoir on the Ulley and Morthern Brooks, near Packman's Bridge. W. Whitfield, Clerk to the Board, Board of Health Offices, Howard-street, Rotheram.

UXBRIDGE UNION, Aug. 5.—For the erection of additional buildings at the Union House. Charles Woodbridge, Clerk, Uxbridge.

THE GREAT INDIAN PENINSULA RAILWAY COMPANY, Aug. 5,—For crossings, as per specification and drawing. Thos. R. Watt, Managing Director. Company's Offices, 3, New Broad-street, London.

SOUTHAMPTON, Aug. 2.—For 600 tons of the best broken granite, and 200 tons of granite siftings. R. S. Pearce, Clerk to the Local Board of Health, Public Health Office, Audit House, Southampton.

STANNINGLEY, Aug. 11.—For the erection of two dwelling houses. Joseph Roberts, Architect, 18, East Parade, Leeds.

STOCKPORT, Aug. 3.—For wrought-iron girders, with purifier covers, wrought-iron bearers, and cast-iron plates, &c. James Jacques Engineer, Gas-works, Stockport.

ST. MARY ABBOTT'S, KENSINGTON, Sept. 7.—For the erection of a new infirmary and other buildings adjoining their workhouse. Reuben Green, Clerk to the Guardians, No. 1, Devonshire-terrace, Wright's-lane, Kensington.

FAILSWORTH LOCAL BOARD, Aug. 3.—For the construction of a main sewer. John Taylor, Clerk to the Board.

HENLEY LOCAL BOARD, Aug. 3.—For taking up the existing pitching in Bell-street, and providing and laying on concrete new worked stone gutters, &c. Frederick Haslam, Surveyor to the Board. Surveyor's Office, Henley-on-Thames.

HORSHAM, SUSSEX, Aug. 9.—For the erection of a villa residence, with conservatory and stabling, to be built at North Parade.

BOOTLE, Aug. 2.—For widening the Canal Bridge at Irlam-lane, by the addition of five cast-iron spandril girders on each side of the existing building. Thomas D. Pierce, Deputy Town Clerk, Municipal Offices, Merton-road, Bootle.

BROMLEY LOCAL BOARD, Aug. 1.—For the construction of about 11,000 feet of earthenware pipe sewers. Arthur Jacob, Bromley, Kent.

BRUTON CHURCH (Somerset), Aug. 12.—For the restoration of the nave of the above church. Messrs. Slater and Carpenter, 4, Regent-street, S.W.

LEEDS, Aug. 2.—For taking down and reconstructing fence walls, and altering buildings for widening Hunslet-road. C. A. Curwood, Town Clerk.

LEEDS, Aug. 6.—For the various works in fifteen houses and three shops in Hunslet-carr. Richard Towse, Architect, Dewsbury-road, Leeds.

LEEDS, Aug. 12.—For the erection of a new Wesleyan chapel, proposed to be built at Garforth, near Leeds. Geo. Smith, Architect, Popplewell's Chambers, Bradford.

LINCOLN, Aug. 15.—Parish church, St. Martin's.—For the building of a new church. William Stork Beckit, Architect, Bridlesmith Gate, Nottingham.

LEEDS, Aug. 9.—For the whole or any portion of the works required in the erection of a chapel, with schools and class-rooms, in Belle Vue-road. G. Gardiner, 9, East Parade, London.

LEEDS, Aug. 12.—For the various works required in the erection and completion of a villa residence at Woodland Grove, Chapel Town-road. Alfred H. Thompson, Architect, 14, Park-square, Leeds.

◆

BANKRUPTS.

TO SURRENDER AT BASINGHALL-STREET.

George Vavasseur, Inverness-terrace, Hammersmith, iron church builder, August 3, at 2—James Laws, Stroud Green-lane, builder, August 8, at 1.30.

TO SURRENDER IN THE COUNTRY.

William Allen, Birmingham, builder, August 3, at 11—Frederick Richards, Wilmslow, Cheshire, civil engineer, August 4, at 9½.

PUBLIC EXAMINATIONS.—ACT 1869.

T. Roberts and T. L. Roberts, Walham-green, Middlesex, builders, Nov. 8—F. T. Yowill, Surbiton, builder, Sept. 16—W. Pennington, Runcorn, builder, Aug. 4—R. and J. Mason, Gateshead, builders, Aug. 26—M. J. Alcock, Leamington Priors, builder, Aug. 21.

DIVIDEND MEETING.

J. Wakinshaw, Monkwearmouth, iron manufacturer, Aug. 6.

SCOTCH SEQUESTRATIONS.

Peter Weir and James Weir, Airdrie, and Lamb-hill, near Glasgow, contractors, July 29—Andrew Knox, Glasgow, glazier, July 29—James Urquhart, Inverness, carpenter, Aug 2, at 12—Alexander Christie, Perth, sculptor, Aug. 1, at 12.

◆

PARTNERSHIPS DISSOLVED.

John Kenworthy and Joseph Kenworthy, Lower Openshaw, near Manchester, plasterers—R. Hughes, D. Henderson, and D. Crawford, Liverpool, brass-founders.

THE BUILDING NEWS.

LONDON, FRIDAY, AUGUST 5, 1870.

WATER—GOOD, BAD, AND GOOD ENOUGH.

THE Royal Commission, of whom Sir W. Denison is chairman, and Dr. Frankland and Mr. John Chalmers Morton his colleagues, say that absolutely pure water is not to be found in nature. Even at the moment of its condensation in the atmosphere from invisible vapour to visible cloud, water absorbs gases, and when it falls to the earth as rain it percolates through strata or flows over surfaces in some degree soluble, and dissolves quantities of solid matter varying from 3lb. to 50lb. in every 100,000lb. of water. The Commissioners give the following as the chief characteristics of unpolluted water :—"It is tasteless and inodorous, possesses a neutral or faintly alkaline re-action, rarely contains in 100,000lb. more than $\frac{1}{2}$lb. of carbon and one-tenth of a pound of nitrogen in the form of organic matter, and is incapable of putrefaction even when kept for some time in close vessels at a summer temperature."

This water may be spoiled in its passage to the sea in many ways, which may be brought under two general heads, "Sewage" and "Manufacturing Refuse." Sewage is a very complex fluid. A large part of its most offensive matter is human excrement, and also urine thrown down gulley holes; but, mixed with this, there is the water from kitchens containing vegetable and animal refuse, and that from wash-houses containing soap and the animal matters from soiled linen. There is also the drainage from stables and cow-houses, and that from slaughter-houses. In fact, say the Commissioners, sewage cannot be looked upon solely as human excrement diluted with water, but as water polluted with a great variety of matters—some held in suspension and some in solution—but both present in such a condition as to render it impossible, in the present state of our knowledge, practically to cleanse and purify sewage so thoroughly as to make it safe for drinking even when largely diluted with unpolluted water.

A great deal of the manufacturing refuse is passed into the sewers as the readiest way of getting rid of it, and then it merely adds other ingredients to those already passing down them; but where the manufactories are situated on or near a stream, and the water made use of in the process of manufacture is afterwards transferred directly to the river, polluted by admixture with the special matters used in the different processes, such refuse matters can be treated separately as manufacturing pollution. These may be classified thus: Pollution by dye, print, and bleach works; by chemical works; by tanneries; by paper making; by woollen works; and by silk works.

Of the different kinds of pollution affecting rivers, animal organic matter as it occurs in sewage is that which renders water not only most offensive to the senses, but most likely to injure health, both by its gaseous emanations and its deleterious effects when used as a beverage. Rivers so polluted frequently contain from 1lb. to more than 2lb. of organic carbon, and from 1-3lb. to $\frac{3}{4}$lb. of organic nitrogen, in 100,000lb. Pollution by vegetable organic matter, such as that caused by dye and print works, stands next as regards offensiveness, water so polluted being excessively unpleasant not only to the sight, but in warm weather to the smell. It often contains twice as large a proportion of organic carbons as sewage water does, but owing to the smaller proportion of nitrogen in vegetable substances it rarely contains more than 1-3lb. of organic nitrogen in 100,000lb. of water.

Chemical works contribute chiefly mineral impurities, which often communicate to water extreme hardness and other disagreeable and even poisonous properties.

Having reviewed the remarks of the Commission on good water and bad, let us see what they say in respect of rendering polluted water good enough to be allowed to flow into any river or stream from which it is not intended to take water immediately for domestic use. The prohibitory standard is as follows:—

(1). Any liquid containing, in suspension, more than three parts by weight of dry mineral matter in 100,000 parts by weight of the liquid.

(2). Any liquid containing, in solution, more than two parts of weight of organic carbon, or 3-10 part by weight of organic nitrogen, in 100,000 parts by weight of the liquid.

(3). Any liquid which shall exhibit by daylight a distinct colour when a stratum of it, one inch deep, is placed in a white porcelain or earthenware vessel.

There are other stipulations which apply more particularly to certain manufacturing towns, but as applicable to towns in general the above are the most important ones.

This standard can be attained, says the Commissioners, by the present known methods of filtration, either through soil in the way of irrigation or through filter beds. The Commissioners regard the irrigation of land with town sewage in a different light to that in which it has been usually regarded. They say that the purification of sewage by irrigation takes place when it passes *through* the soil to a considerable depth, and not merely, as has been often said, by running over its surface. The Commissioners find that the filtration of sewage through either porous soil or sharp sand has the same effect in purifying it that irrigation has; that is to say, it purifies it to a degree which makes it admissible into rivers or other streams such as we have mentioned. The only difference between the two processes, viz., simple filtration and irrigation, is that the former is not remunerative, while the latter is so. Of course, the advisability of adopting one or the other method will depend in any town on the facility for acquiring land for the purpose of irrigation. Where that can be done at a reasonable outlay it is the better method, but where land cannot be had the other method claims attention.

It is curious that so many attempts to filter sewage having failed, this simple method of dealing with it should be the one at last recommended by the Royal Commission; but when we consider the manner in which such attempts have been made, it is clear that it is not filtration that has been wrong but the mode of filtering. There are three ways of passing water through a filter bed—(1) horizontally, (2) upwards, and (3) downwards. Both the former methods have been tried and have failed, for good reasons given by the Commissioners; the latter method, however, is the one they find to effect a purification of the sewage. When water or sewage is passed upwards or sideways through sand or other filtering material, the interstices become full of liquid but devoid of air; whereas, by downward filtration, after shutting off the sewage from one bed and turning it on to another, and so on alternately, which would be the method adopted in practice, the air follows the last of the sewage down into the sand, and thoroughly permeates it; and when sewage is again turned on to that bed it encounters air in its descent and becomes oxidized or purified to the degree recommended by the Commissioners as admissible into rivers. It is not difficult to see why this latter method should be so much better than either of the others. By this method the matter held in suspension in the sewage is arrested on the surface, where it can be easily got at for removal, while by the horizontal method the solid matter lodges amongst the filtering materials and fouls it, and by the upward method the same matter lodges underneath the filter bed, and is difficult to be got at for removal, besides the inconvenience resulting from the lighter particles of it being carried up into the filtering materials and fouling them.

The inquiries into the pollution of rivers in Lancashire were expected by the Commission to result in some practical conclusions upon the influence of such rivers on the health of the people, and questions were addressed to all the municipal bodies and Boards of Health within the Mersey and Ribble districts whether the river, stream, or canal passing through or by their town was a source of ill-health or discomfort; and having before them the opinions of the authorities on this subject, and having also the actual statistics of mortality within their respective jurisdictions, and information on the density of population, on the number of cellar dwellings inhabited within the place, the provision of water-closets and privies, the sufficiency of the water supply, and other points bearing generally on the health of the people, and having made themselves acquainted with the condition of the running waters throughout the district, the Commission are not able to say whether the liability to ill-health in any town is influenced by its proximity to a filthy river. This is partly owing to the incompleteness of the health statistics laid before them; but, besides this, it was with astonishment the Commissioners found that Boards of Health in several large towns, and many smaller ones, were not able to inform them of the death-rate within their districts, still less to give them information of the health within particular divisions of those districts.

WORKMEN'S INTERNATIONAL EXHIBITION.

THE organised efforts of working men for their own improvement, whether in trade, in political representation, or in their social condition, have become rather a feature in the present age. We hear, and consequently we think, more about the working classes than we were wont to do; and whether the movement we refer to is due only to a band of noisy agitators for working men's rights, or is the result of deeper and more genuine effort on the part of the whole body, we cannot but marvel at the changes it has effected in a comparatively short period of time. The same spirit which in one place has given us strikes, in another, properly directed, has produced an international exhibition, and such a result as this is sufficiently surprising. Those who have watched the growth of exhibitions—and especially international exhibitions—since the first success in 1851, will long before now have become heartily weary of them, and we must confess that we started for the Agricultural Hall rather in this frame of mind. The promoters of this gathering have laid great stress upon a point of really very little importance, except to the men concerned—namely, that all articles should bear the name of the actual workman or artificer engaged in their production, and they have determined to award no prizes except to the men themselves. Now, from an exhibition point of view, we little care, so long as a thing is really good of its kind, what workman made it if we know that it is to be obtained of Messrs. So-and-so. Of course, in objects requiring great art and skill in their production, it may be interesting to know the name of the artist; but the names of a string of men engaged on a kitchen range, a pocket knife, or a saddle, carry with them no interest, and convey no information except to half-a-score of men working in the same shop, though the publication of these names may perhaps do good in stimulating the men and encouraging them to further exertions by making them take a pride in their work. But the promise of furnishing us with the names of the men is but very poorly fulfilled; in fact, we should say it was the exception rather than the rule—some of the foreigners, be it observed, having complied with the regulation better than the English exhibitors.

The Agricultural Hall, although in our mind inseparably connected with cattle shows and live stock, is not at all a bad building for an exhibition; and if the roof was only so contrived as to keep the rain off the goods it would be as fit a building for the purpose as any in London. On the morning of our visit, and during a heavy thunderstorm, the whole place was dripping, and the poor foreigners running about and wringing their hands. The main entry is far from imposing, as the visitor finds himself opposite the under side of the orchestra, which the authorities discovered to be unsafe the day before it was wanted for the opening ceremony. A new platform had to be erected in front of this, which still remains to monopolise a great part of the space, and to cover, as far as possible, the empty floor space, for the hall is far from full, and the exhibition has an air of incompleteness and disorder which is very distressing. Now, with no wish to be severe upon the authorities, we must point out one or two matters to which, if the thing is to succeed and to be a credit to them, they must immediately direct their attention. Firstly, the catalogue is practically useless, and ought not to be sold to mislead the visitor; surely by this time they ought to have something ready and fit for use. It is too late to say anything about classification, which has apparently received no attention at all, but the labelling should be put in hand at once; many of the objects are only distinguished by their direction card to the committee, and many more have no distinguishing sign at all. With regard to the objects, of course in such a display it is impossible to avoid some contributions, but we think that a little discretion would have saved the committee from a needlessly large proportion of things which should never have been admitted—gentlemen with ingenious models which play wonderful tunes on the deposition of a penny in the hole in the roof, penny peep-shows, vendors of cheap sweetmeats and bad scent, wonderful needles, and invaluable household cements. Then there is a large class of objects which claim our attention merely from the fact of their being made of materials of which they have no right to be made — pictures in shavings and wool-work, ruins in shells, and flowers of fishbones; more objectionable than all, a class of petty tradesmen and toy sellers who pester you to buy sixpenny trumpery, and who, if you are rash enough to stop opposite their stalls, feel insulted if you do not buy something. Why not move them all into a corner of the gallery by themselves, and constitute them a chamber of horrors at twopence extra? After a careful examination of the display, we came to the conclusion that it might be divided into two classes—things done by untaught workmen which would have been better done by skilled artizans, which were, in fact, "very good considering;" and, secondly, the ordinary run of objects which one meets with in exhibitions, differing from them only in the mode in which they are labelled. Now, of course, the former class is the more distinctive one as a feature of the display, and it is with this class we have to find the most fault. If a carpenter be a good workman, and choose to devote his spare time to making some piece of wood-work or furniture which shall be taking him a little above and beyond his ordinary sphere of work, we should be the first to applaud his effort and to reward him in any way in our power, but if he devotes his energies to making a lock, or some piece of metal work which any smith would do infinitely better, and with infinitely less trouble, we should deny to him all praise for his undertaking. There is a certain class of men who are constantly trying to do skilled work other than that to which they have been trained, and the Agricultural Hall abounds with the productions of these men.

When we had occasion to notice the drawings sent up by the School of Art students we did not, as we might have done, allude to the occupations of the prize-winners. We might have shown that plasterers, carpenters, and labourers, properly taught, had sent up some of the most careful works; and it is painful with these drawings in view to see the misdirected art efforts of working men in this exhibition. In fact, the art at Islington is most deplorable. From the wretchedly bad sculpture in the hall we get to the pictures in the gallery, which are worse. The Pantheon, which usually contained a collection of second and third-rate works, was a heaven of excellence compared with the trashy collection of furniture paintings on these walls. What on earth have they to do with working men, or in what way did they get into the exhibition? They will do more harm in vitiating the taste of the visitors than the rest of the exhibition will do good in improving it.

But we must pass on to a brief consideration of the foreign goods in the exhibition. The countries appear to be disposed in strips extending transversely across the building. France is represented by an enterprising vendor of cheap coffee, backed up by the proprietor of an ingenious contrivance for using it. Denmark sends some very nicely designed pottery in imitation of Etruscan ware. There was no exhibitor's name to the stall, and no label, in fact, of any description. The goldsmiths' work exhibited by V. Christesen is very beautiful, and the combination of the precious metal and the use of oxydized silver very appropriate. From Denmark, also, we have some first-rate marqueterie work and some wonderful ivory carvings for the royal chapel. The latter are the work of J. L. Griesing, in the employ of Messrs. J. G. Schwartz and Son, of Copenhagen. The objects contributed by Italy are of a very costly character, and savour very little of the working-man element. Thus we have the most elaborate Florentine marble mosaic tables, and a costly cabinet with inlays of precious marbles and lapis lazuli. The Roman mosaics set in brooches and trinkets are all labelled in great red prices for sale, and look more like show goods in a shop window than objects in an exhibition. The same remark applies to the cameos, which are certainly remarkably cheap. The carved wood-work on the other side of the hall is perhaps the best work of the kind in the exhibition, but we were sorry to see so much time and skill wasted upon the copy of a design for a ruined arch. From Bavaria we have the usual work in buckhorn and the fret-saw work already so well known, and stowed away near the refreshments are some interesting objects from the Netherlands. Why they are banished in this way from the other foreign countries we cannot imagine. Perhaps the committee felt that until their country was annexed their geographical position was uncertain.

It may perhaps assist the visitor, in the absence of any guide, to state that we have discovered traces of some foreign country or other in a remote angle of the gallery, and that we have reason to believe that France makes up for her deficiencies down stairs by selling fancy flowers near the peep-shows. A thin belt of objects, dividing the hall into two nearly equal portions, is contributed by the Government of Bombay, and, except that we miss its special reference to the aims of the exhibition, it affords an excellent idea of the various branches of native industry. From the colonies we pass on to the mother country, and here there is too much to do justice to in a single article. Much that we have said of the exhibition generally applies specially to England. Indeed, the works of the foreigners are upon the whole better labelled, managed, and displayed than those of our own countrymen, and we believe that this is entirely due to the better organization to which they have been subjected. Of course, in foreign countries, a committee was formed for the reception and despatch of the goods, a Government or municipal grant obtained for the expenses, and some one was made responsible for the display as a whole. Now what strikes us most forcibly is the absence of any such organization on the British side. Nobody has to see that the things are properly cared for and arranged, and the consequence is that, except in the case of a few large firms who have gone to considerable expense in displaying their work, the bulk of the objects are in confusion. It is as if a few men—quite ignorant of the difficulties and obligations of an exhibition—had taken a big room and let anyone come in and do as they liked; and the sooner this impressson, which was unavoidably forced upon us, is removed, the better it will be for the chances of success. We may mention, in conclusion, a few of the objects which attracted our attention. Mr. J. T. Wilson has an oak lectern and pulpit, designed and executed by himself; the carving is very fair. The pulpit, we notice, is incomplete. Messrs. Hampton and Son show a drawing-room chair, designed by B. Lucraft and executed by J. Walker. The design is peculiar, from the use of carved stays between the seat and back to give extra strength, and the introduction of a monogram painted on plate glass as a panel in the centre of the back is curious. Messrs. Moseley and Company exhibit their electric bells. Messrs. Cox and Son have some very good ecclesiastical furniture and metal work. We noticed a double-top engraved lectern, which is assigned to the following workmen: makers, J. Shelley and J. Wilson; engraver, H. Sallows; polishers, J. Price and W. Price. Perhaps the most thorough display in the exhibition is that of Messrs. Mappin and Webb—the names of the workmen in every branch of trade being most carefully attached to each object. Thus, a gilt cake-plate, price £8 8s., is the work of the following men: designer, Jefferson; modeller, Barratt; caster, Garrad; raised by J. Stanbrook; chased by Harrison; engraved by Davison; mounted by J. G. Simester; polished by J. Salt; plater, Millwood; superintended by W. Duddleston. On the same card are also enumerated the following trades which do not apparently come into operation on the object in question: stamper, embosser, spinner, and finisher. The excellence and finish of all the articles shown by Messrs. Mappin, and the artistic manner in which they are displayed, deserves the utmost commendation. Messrs. Blews and Son send some very good wood-carvings.

The furniture, upon the whole, is poor and below the mark, chiefly owing to the absence of good design—a point in which work of this kind too often fails. There is a very good wardrobe of Roberts's firm: F. Tavener, joiner, and J. Waymark, polisher; and an oak panelled door, with no names of exhibitor or workman.

We cannot now go into the machinery, some of which is very interesting; and we must reserve for a subsequent article what we have to say on the subject of graining, in which branch there is a strong competition. We see from the catalogue that there is to be a workshop competition, but we fear that the committee will find this a very awkward matter to arrange. Although we have been compelled to find a good deal of fault with the management of the exhibition, we should be sorry to condemn the display itself. Those who are accustomed to go through collections of this kind will soon find out the interesting objects; but our chief complaint is that this has not been done for us beforehand by some competent judges. Finally, we would impress upon all those who are interested in workmen and their doings to go and form their own opinion upon the correctness of our strictures, and above all to take warning here and avoid the danger in any future working man's exhibition of collecting the productions of workmen in their idle hours instead of the masterpieces, if we may so call them, of their own legitimate handicraft.

SUNDRY DECORATIVE WORKS AT THE KENSINGTON MUSEUM.

IN examining some of the other decorations at the South Kensington Museum, a question ot some importance meets us at the threshold. This is, whether or not the ornamentation of an apartment should bear any particular relation to its contents, and if so, should or should not this be in strict harmony with them? The South Kensington authorities, and those whom they have employed, have by their works answered this question in the affirmative; we, on the contrary, are inclined to do so in the negative. We do not mean to contend that artists should not take for illustration subjects which bear upon the processes or the history of the art manufactures to which a special room or gallery is devoted, but that we think it is a mistake to imitate throughout its ornamental details those of the objects exhibited within it. Thus we should not wish to see the Elgin marbles housed in a place richly embellished with the hackneyed Greek ornaments of the honeysuckle, &c., or the sphinxes and caryatidæ of Egypt in one dressed up with those adopted from the leaves of the lotus. Consequently, we consider Mr. Owen Jones has erred in endeavouring to give an Oriental aspect to the portion of the exhibition in which the cases of draperies, dresses, and arms from India and Turkey, and the pottery, &c., of China and Japan, are shown. In the first place, however excellent the design of such decoration may be, it is next to impossible to find English workmen capable of executing it with the same freedom and grace as the cunning craftsmen of the East, in whose families, from generation to generation, the secret, or, at least, the peculiar skill of the separate branches of their delicate fabrics, has been preserved. Either the decorated walls and ceilings which surround such objects, or the fabrics themselves, or both, must suffer by the comparison so forced upon the spectator, and we do not hesitate to say that it is the occidental imitation that goes to the wall in this competition, but, unfortunately, not without inflicting an amount of injury, though not a corresponding one, upon those precious Oriental objects of *vertu* themselves. After all that can be, and is, justly said in the praise of these works, the simplicity, and what we may call the low aim of Eastern designs, is apt to pall upon and create a satiety in the minds of spectators; and we have often found, after an inspection of the beautiful Indian Museum at the India Office, that the interminable repetition of diapers and other linear arrangements becomes slightly wearisome. It is the exquisite refinement in their texture and coloring that is their enduring charm. It stands to reason, therefore, that if, besides varieties of shawls, our eyes whithersoever we turn them are met by the oft-recurring shawl patterns above, below, and around us, executed without the same degree of refinement and beauty of coloring possessed by the originals, we end with a mental recognition that

> Of patterns rounded, patterns square,
> Of patterns pretty, patterns fair;
> Of chasings smooth and chasings rough,
> We thank the Indies we've had enough.

Another practical disadvantage of this decorative treatment of the space referred to is that the delicacy of the work appears to be thought so liable to injury from the fumes of gas that this portion of the museum is seldom lighted up in the evening, the very time when the articles displayed in it would under this artificial light appear to their best advantage.

On the whole, we think there is but slight doubt that the decoration of buildings or apartments destined to contain pictures, statues, or objects of rich and beautiful workmanship should be restrained and kept in subordination. It need not be poverty-stricken or bald, but it should be quiet and refined; and there should be no attempt at either imitation of, or competition with, the character of the contents, and the colors chosen should be such as would enhance by contrast those of the objects exhibited. Such has been the judicious aim of the decorators of the New Royal Academy saloons, and such we should recommend for all similar purposes. Are we by this limitation imposing an undue restriction upon the talents and efforts of designers? Not so; there is ample space in every public building, and certainly there is at South Kensington, for their employment and encouragement, and their work could be wisely confined to such apartments as the refreshment-rooms, and the staircases, corridors, &c.

Perhaps we ought to except from these remarks the treatment of the alcoves in the large court. The whole of the South Court is arranged more ornamentally than the rest of the Museum, and there are comparatively fewer objects in it, and spectators feel, as it were, that they have leisure to look about them, and therefore the alcoves, as they are called in the guide-books, or arched recesses in the upper portion of the walls, can claim a fair share of attention. Fourteen of these on each side are intended to contain portraits of eminent men of all ages connected with the arts. These pictures are in mosaic, and from the cartoons of some of the most celebrated of the artists of the modern English school.

The opportunities of this character that have been afforded to painters have been so few of late years that their efforts are necessarily tentative and experimental. Even the material is novel to them, and therefore great allowance should be made in any criticism as to the result. It seems to us that though mosaic is an enduring and admirable material for decoration, it needs broader and bolder treatment than it has here received, and the backgrounds should be more varied and broken in tint. It appears almost as if it were going to useless trouble to compose them of small tesseræ if these be chosen of so uniform a tint that the result looks as if it had been cut out of gilt paper and scored with a few lines. However this may be, their pictures can really only be looked upon as paintings in a gallery—a series of historical portraits—and not as examples of decoration. They, and Mr. Godfrey Sykes's colouring of the construction, are but little in harmony. Similarly out of unison are Mr. Moore's clever proscenium at the Queen's Theatre and the patterns and colouring which surround it. It is useless to expect to obtain a satisfactory general result by the combination of separate works even by the ablest hands; one master-mind must direct and control the whole. Pictures are one thing and decoration is another, and the two cannot well be combined in the same apartment. Pictures are rightly isolated in frames, and need a quiet and unobtrusive background. Decoration is a picture in itself, and will not bear interruption or the interpolation of others in its midst. These principles need to be borne in mind in the treatment of domestic interiors. We have lately seen a tolerable compromise when in lofty rooms a band of decoration like a frieze is continued round them immediately below the ceiling, and upon space intermediate between this and the dado, purposely left a quiet tint, pictures are arranged; but this, at best, is but a compromise. Each part is alone satisfactory when viewed by itself, and, as a whole, no very charming effect is the result, the two classes of painting clashing more or less.

Leaving, however, for the present these larger courts, as our space is limited, we will glance for a moment at one of the newer galleries above. When we enter the Ceramic—we beg pardon, and bow to South Kensington authority and say the Keramic—Gallery we are again met by the attempt to make everything correspond, and with the feelings of the ancient mariner, when nought but water met his ken, we begin to look with dismay upon the crockery, crockery, everywhere. Our old friends, the porcelain-cased columns, of which we had had quite enough in the Central Refreshment Room, present themselves again here *apropos* of the contents of the Museum, and certainly, in our opinion, appear to still greater disadvantage than those in the room below, for among the old specimens of Flanders, Persian, and Chinese earthenware their cold and glistening crudity becomes painfully obtrusive. We much prefer another rather original attempt at decoration which has been made in this gallery in the method of lighting. Two powerful burners have been placed outside the semicircular windows which occupy the heads of the arches of the several bays, and the glass has been painted with designs by Mr. W. B. Scott, the artist, who has produced a thoughtful and well-considered scheme for the subjects. These paintings will thus be visible by day and by night, and the tempered light thrown by these windows upon the interesting objects with which this gallery is filled is especially pleasing. To this series of glass paintings we intend to recur upon another occasion, as they well deserve more careful examination than we have as yet been able to devote to them; to such opportunity we defer, therefore, any further remarks on this subject.

◆

SOUTH WINGFIELD MANOR, DERBYSHIRE.

MR. EDMUND B. FERREY has been fortunate in his choice of the subject of this monograph, and has done excellent justice to it. South Wingfield Manor is, as he says, a charming old manor, one of the most interesting in Derbyshire, which, though now in ruins, still has a very considerable part of the architectural portions of the building remaining in an admirable state of preservation. To its present possessor, the Rev. Imanuel Halton, the thanks of the public, as well as of architectural students, are greatly due for this condition, as that gentleman takes a proper pride in this, his interesting heirloom, and has removed the ivy with which some years since it was unduly overgrown; this is now kept within reasonable bounds, and not suffered to do damage to what is left of the structure. This manor-house is said by Camden to have been built by Ralph Lord Cromwell, Lord Treasurer of England in the reign of Henry VI. It somewhat resembles Haddon Hall in the great irregularity of its walls and the position of the various buildings in relation to each other, but must in its prime, as Mr. E. Ferey says, have excelled that ancient and better known mansion. It possesses strong historical interest and associations from its having been for several years the place where the unfortunate Mary, Queen of Scots, was imprisoned.

The general style of this building is "Transitional" from the Decorated to the Perpendicular Gothic, although some parts are pure Decorated and a few Early English, with later additions belonging to the date of the sixteenth century. For any further details of its history we must refer to the descriptive pages of our author. The buildings are arranged around two quadrangular courts; the outer or south one about 200ft. long by 150ft. broad; and the inner or north one about 150ft. by 100ft. The principal group occupies the whole of the north side of the latter, and contains a noble banqueting hall 72ft. by 36ft., with an external porch of two storeys, and a fine lofty bay window at the eastern end of this apartment. There is a groined crypt below, which was probably used as a retainers' hall. Another fine state apartment, at right angles to the banqueting hall communicated with it, and had another spacious room under it. To the west of these are the kitchen, the buttery, and offices; and to the east, but at some distance, was a chapel, with a cloister of connection with the main buildings. Along the western side of the north quadrangle was the range of apartments occupied by Mary, Queen of Scots, but these—though averred by Blore to have been the handsomest portion—are now destroyed; and on the south side, dividing their inner quadrangle from the outer one, is a picturesque entrance double gateway, the porter's lodge, and a lofty tower at the north-west angle. A corresponding tower formerly existing at the north-east angle is shown in Blore's views, but fell down some years since. The entrance gateways form one of the earliest parts of the structure; the arch mouldings are bold, being simply quirked rolls, and the effect of this range of buildings from the outer south quadrangle, with its numerous and boldly projecting chimney-stacks, is striking. On the east side of the south quadrangle is the guards' chambers, a building 116ft. by 25ft. internal dimensions, with rooms above; and another entrance gateway and porter's lodge in the south-eastern angle, to which is attached an interesting ancient barn, which is continued along the south side of this quadrangle, and is 71ft. long by 30ft. wide within. This has substantial buttressed walls, but its massive oak roof is carried, independently of them, upon large and strong oak posts. The care with which this interesting relic of Mediæval domestic architecture has been represented in this monograph does Mr. E. Ferrey great credit. He vouches for the accuracy of all the dimensions given, and for the truthfulness of the sizes of the stones and character of the masonry, as having been plotted upon the spot—a point to which too much importance cannot be attributed. As we think the work throughout bears evidence to the correctness of this statement, we shall hope to see some other of our unpublished architectural relics illustrated hereafter by the same hand.

THE NEW LAW COURTS AND THE NATIONAL GALLERY.

THE four money votes granted by the House of Commons on Tuesday evening have attracted little attention in comparison to that which would have been bestowed upon them in the earlier days of the session, when no foreign complications claimed the attention of the Government or presented themselves as likely party questions to the Opposition leaders. Possibly, had this not been the case, we might have been favoured with another year's delay in the erection of the New Law Courts, accompanied by a further loss of public money to be added to the £900,000 already spent. After about twelve years' delay a commencement is now really to be made; £21,450 has been granted for the excavation of the site and laying some of the foundation work, which will scarcely be completed by the time Parliament reassembles. So far it is satisfactory to know that the thing is finally settled, and that the best man will be allowed to erect the best building on the best site. The visions of Thames Embankment gentlemen, who imagined that they championed the wishes of "All England against Lincoln's Inn," and the lawyers—who, of course, could not be supposed to know which site suited them best—are at last dispelled for ever, and the plans of Inigo Jones may be left a little longer in the possession of the Chancellor of the Exchequer.

There is little worthy of notice in the National Gallery vote of £37,250 beyond the rather curious clause that the building is to be erected from the designs of Mr. Barry "in the event of his subscribing to the conditions of his employment." If the National Gallery is rebuilt at all, Mr. Barry ought to build it without any unusual conditions imposed upon him; but we shall rather welcome any occurrence which may prevent what we have all along maintained to be an unnecessary expenditure of public money.

The New Home and Colonial Offices, to be added to the recently built Foreign Office by Mr. Scott (who, together with Mr. Street, does not seem to be required to "subscribe to conditions of employment"), re-awaken the old regret at Lord Palmerston's art tastes which overruled the truer instincts of Mr. Scott, and while giving each of the three great architects an opportunity of stamping his name on the art-history of England, tied the hands of one of them equally to the disadvantage of him and his art.

Another exodus from the British Museum to South Kensington—the Promised Land apparently of all appertaining to Art and Science comprises this time the Natural History Collections. While it is quite clear that the British Museum must be cleared of some of its contents, if the rest are ever to be looked at at all, it does not seem naturally to to follow that South Kensington should receive all the surplus treasures. It is one comfort, however, to think that, under the directions of some future less rapacious manager than Mr. Cole, South Kensington itself may be considered full some day, and then ,possibly, the Government may see their way to the acquirement of some site for the erection of a museum not quite out of the reach of everybody but the favoured inhabitants of the Court Suburb.

ROYAL ARCHÆOLOGICAL INSTITUTE OF GREAT BRITAIN AND IRELAND AT LEICESTER.

ON Tuesday week, after their visit to S. Martin's Church, under the guidance of Mr. J. H. Parker, F.S.A., the members met in the evening at the Masonic Hall at half-past eight, under the presidency of the Ven. Archdeacon Trollope, the Chairman of the Architectural Section. The first paper read was by the Rev. J. G. Joyce, "On the Stained Glass Windows in Fairford Church, Gloucestershire."

The Lecturer said pictures of the same were to be seen in the temporary museum at the Free Library. These cartoons of the stained glass were about to be placed in the South Kensington Museum. As to how the stained glass became to be placed in the church, he noticed that Fairford Church was a rebuilt structure (not recently) of the Perpendicular period. The construction was peculiar, and showed the motives under which the church was built. It was rebuilt in 1494, the donor being John Tamer, Esq., lord of the manor, to whose memory a tomb was erected in the building. John Tamer, Esq., was a trader in flannels, and it was alleged by tradition that the glass came to Fairford Church through it having been pirated across the Channel in a vessel captured by one of Tamer's vessels. He had no doubt that a portion of the glass, if not the whole of it, so came into the possession of Fairford Church. The sunken panels in the church were like the panels in the glass, and in other portions the architectural features corresponded with the glass. There were twenty-eight subjects, and the sizes of some of the pieces of glass were surprisingly large. Several parts were wanting to the figures, while other pieces were "starred," and liable to fall out of their crazy fastenings. He then went on to notice the subjects in the windows, one being the admission by S. Peter of persons up the golden steps of Heaven. This glass has obtained great fame on the Continent, and the learned lecturer proceeded to notice that many years ago similar windows were to be found in a church at Hershau. Every one of the subjects showed an art tradition. There could not, he thought, be a greater mistake than for it to be said, as had been stated, that both the design and the execution were by the same persons. The great west window, especially the lower part, was impressed with the Mediæval character—the toes of S Peter particularly so, being elongated, while the legs of the woman beseeching S. Peter to admit her to Heaven were also too elongated. Several other points he noticed as representing a Mediæval character, and contrasting very much with others of the pictures. The twelve Prophets were done by the same hand, but not the painting of the glass. He could not attribute the glass to Albert Durer, as in all the architectural details he was more classical. The whole of the glass had been fitted to a Perpendicular tracery. The drawing of the horses, the nimbus, and the hands and feet also showed that Durer did not draw the pictures. He then reproduced some figures containing the signature "W. A.," which he said approached the nearest to the Fairford glass of any he had seen, although he could not tell its author. This corresponded in most of its detail excepting the drapery. The Fairford glass contained great dignity of form and exquisite colouring, and a large proportion of white light, and he considered it highly desirable that the Government should become possessed of the tracings for the benefit of future ages in the matter of church windows.

In the discussion which followed, Mr. Clark thought it very improbable that the glass had been taken out and buried for a time, as if it were the places would have to be filled up in the interim, while the quantity of stained glass in that locality did not seem to indicate that there was any great wanton breakage of stained glass at that period. He thought in Fairford Church they had some of the best kinds of glass painting. —Mr. Mackay thought they might rejoice at the windows being copied for the purpose of being placed in the South Kensington Museum. He considered the work as that of a profound artist, but that it had been attributed to Albert Durer more for his fame as a distinguished artist than for there being any foundation for assigning it to him. He highly approved of the windows as good specimens of glass for use in church windows. —The Ven. Chairman thought the glass had been made for the church, and that undoubtedly it had been produced by two artists. He then called upon Mr. Thompson to read his paper on "The Jews and the Jewry Wall."

This paper was an interesting description of the old fragment of Roman masonry in Leicester, known as the Jewry wall, which, as Mr. Thompson pointed out, was probably in the Early Mediæval period surrounded by Roman ruins—a place where no Christian would care to intrude, yet deemed good enough for the residence of the persecuted children of Israel who, as in all large towns, where limited to a particular district.

On the following day (Wednesday) a meeting was held in the Masonic Hall, Lord Talbot de Malahide presiding, when Archdeacon Trollope delivered an introductory adddress, eulogising archæology, and encouraging the younger students of the science to increase their knowledge by attendance at such gatherings as those of the Institute. A paper on "Roman Leicester" was then read by the Rev. J. G. Joyce, followed by another by Mr. J. Burtt, entitled, "Contributions to the History of Leicester Abbey." In the afternoon a large party met at the Castle, where the Deputy Constable, W. Napier Reeve, Esq., was in attendance to receive the guests. The company assembled in the Crown Court, where Mr. Reeve, having opened the Duchy of Lancaster's Court in due form, proceeded to deliver an address explanatory of the history of the Castle. In the course of his remarks he slightly adverted to the Saxon story, and to the alleged foundation of the Castle by Ethelfreda, the daughter of Alfred the Great, and to the presence there of Athelstan, Edward, and other worthies of the Saxon dynasty, and especially to the Lady Godiva. Mr. Reeve proceeded to the Norman, or as he called it, the historical time—tracing out the succession of the Norman earls. Mr. Reeve then traced the history of the Castle till the earldom became emerged in the Crown of England, and referred to the charter now in the Museum, granted by Henry V. to the Duke of York at the Castle at Leicester, two years before the Battle of Agincourt. Mr. Reeve then produced the baton of the constable, made from oak growing in the days of Egbert, and then, adjourning the Duchy Court, vacated his seat. The Rev. H J. Hoskyns, in the absence of Sir F. T. Fowke, Bart., took the seat as Deputy Chairman, and

Mr. G. T. Clarke gave an explanation of the building. He said the Court in which they were then assembled formed a portion of the fine old Norman hall of Leicester Castle, and it was a very fine specimen, and one of the very rare halls of the kind in the kingdom. Leicester Castle had evidently been a great stronghold, and of much importance, as indicated by the large size of the hall. After pointing out some Norman windows, and explaining other details connected therewith, the company proceeded to the Magazine, which Mr. Clarke explained was a gateway of the new portion of the Castle generally attributed to John of Gaunt, who lived in the time of Richard II. It was early Perpendicular work, and he believed it to have been built in the time of

Henry VII. The Mound was next visited. This Mr. Clark thought was a mound which displayed considerable military skill, as it presented an entire command of Leicester. It was not in its former condition. The river Soar in its former state was a most excellent boundary on the one side, and that part known as the Willow Bridge was a boundary on the east. If they looked at the Ordnance Map they would find that this position was stronger than any in Leicester, because it was banked up on every side, and fell towards every side of the town. S. Mary's Church was formerly the chapel belonging to the Castle, which was formerly carried beyond the garden, where was the abutment of the original wall, beyond which was the ditch. The enclosure within the precincts of the Castle was known as the Castle View. The gateway that they passed under was a good specimen of the Perpendicular style, and might possibly have been built by John o' Gaunt. There could be no doubt that it was of thoroughly Perpendicular work. The Dungeon (or Done John) was next visited, the *cicerone* being Mr. Reeve. No explanation was offered in reference to this, which is supposed from the doorway to be of Norman origin, although the arch of the roof indicates a later period, being of a pointed character. From this dungeon a staircase was traceable leading to the Castle above. The company was then conducted by Mr. Reeve through the gardens at the back, and into the Castle. Subsequently S. Mary's Church was examined. The architecture of the edifice was described; the oldest existing portion of the building was said to be a Norman arcade at the west end, the date of which was probably about 1100. The historical connection of the church was also alluded to. It was stated that it was originally used as the church of the Castle of Leicester. In the fourteenth century it was converted into a parochial church. The edifice had evidently undergone many changes, and had many additions made to it from time to time. One very uncommon feature about it was noticed—the fact that the tower was built independent of the church, and stood on its own foundations. In the chancel a rich Norman sedilia and piscina were pointed out.

Trinity hospital also received a brief visit, the Early English window at the east end being particularly alluded to, as it had four lancets, which was something unusual for windows of that character. Mention was also made of the tomb of the Countess of Derby, erected in the chancel in the fourteenth century.

Conveyances were then procured, and the party drove to the Abbey and carefully examined the excavations which have recently been made there.

In the evening the company again assembled in the Masonic Hall, when Mr. J. T. Burgess, of Leamington, read a paper on the "Last Battle of the Roses."

◆

THE S. PANCRAS INDUSTRIAL SCHOOLS, LEAVESDEN.

THE guardians of S. Pancras, finding it inconvenient to have the pauper children of the parish scattered about in different schools, some at Plaistow, some at Hanwell, and some in the workhouse, determined two years ago to erect schools of their own at Leavesden Woodside, near Watford, Herts. The building operations were commenced in November, 1868, from plans by Messrs. Giles and Biven, of Craven-street, Charing Cross, Mr. Robert Mann, of Weedington-street, Kentish-town, being the contractor. Mr. Mann's contract, which amounted to £37,545, was for the buildings only, and they were completed in April last. The works remaining to be done, and for which contracts have been entered into, are the supplying and fixing of pumps, boilers, water-tanks, fencing, school fittings, gas and water mains and pipes, heating apparatus, &c.; and the construction of roads and sewers. These works, it is anticipated, will all be completed, and the schools ready for the reception of the children, by September 29th next. On entering the grounds, the first building encountered is the receiving-ward, two stories high, and detached from the main building. This building has a frontage of 85ft., is 50ft. deep, and is well supplied with baths for both sexes. Attached to the receiving ward is a porter's lodge. The main building has a frontage of 390ft., by a depth of 190ft., and it contains three corridors, the main one being 350ft. in length, and the two side corridors 160ft. each. The dining-hall is 77ft. long, 45ft. wide, and 35ft. high to the ridge. There is also a smaller dining-hall for infants. The kitchen adjoins the dining-room. The schoolrooms are 80ft. long, 19ft. wide, and 19ft. high. The bath-houses are 50ft. long, 22ft. wide, and 25ft. high, the swimming bath being 45ft. long, 12ft. wide, and from 3ft. to 4ft. deep. The playgrounds are 150ft. long by 120ft. wide, and are partly covered. There are three floors of dormitories, and sleeping-rooms for monitors so arranged as to overlook the whole of each dormitory, and sleeping apartments for the officers and servants, partly in the roof in the central portion of the building. The dormitories on the ground floor are 12ft. high, and on the other floors 11ft. There are day-rooms for the officers, waiting-rooms for parents and friends who come to see the children, a board-room, and a committee-room. There is a water tower 73ft. high, the tank at the top holding 20,000 gallons. At the south side of the main building is the chapel, which, exclusive of the chancel, is 70ft. long, 49ft. wide, and 40ft. high to the ridge. It is Gothic in character, and is approached from the main building by a covered way. The arches dividing the nave and aisles are of red brick, springing from cast-iron columns on blue brick bases. The roof is of stained pine. The general infirmary, which is some distance from the main building, has a frontage of 220ft. by a depth of 91ft., with two stories for wards, and sleeping apartments in the central part for nurses. A short distance off, and detached, is the smallpox and fever infirmary, with a frontage of 221ft., and a depth of 76ft. This building is only one story high. Throughout the buildings the work is of the most substantial character, and the mosaic pavement in the hall of the chief entrance, and the iron balustrade to the staircase, seem to be the only attempts of a purely ornamental character. Accommodation is provided for 700 children.

◆

SUITABLE GROUND FLOORS FOR SMALL HOUSES.

IN many parts of the country it is customary to omit the cellar under a house, merely setting the frame on posts or piles raised from eighteen inches to two and a half feet above the surface of the ground. This space is perfectly useless for any practical purpose, and, being frequently left unenclosed, becomes a hiding place for animals, and, if enclosed, is productive of unwholesome gases which soon find entrance into the house through the floor, there being nothing save the thin flooring, with its occasional knot-holes, to prevent its admission. Such a floor is, in winter, very cold, even when carpeted, and the shrinking of the boards composing it soon makes a new floor unpleasant in this respect, for the tongueing and grooving is scarcely a protection against this shrinkage, especially where stoves are located. If there were a cellar it would be possible to sheathe the ceiling of it and thus make the ground floor more comfortable. But we are now speaking of those small, rapidly erected houses which have no cellar. It is always desirable to raise the ground floor out of the immediate influence of damp, and therefore we would always erect such a dwelling as we have in view on a platform of earth, say twenty inches, at least, in height and this we would level off and roll or tamp with rammers until a firm surface is produced. We would now cover this surface with common unglazed earthen pots (flower pots, for instance) with their mouths downwards and close together, filling up the intervals or spaces with pounded charcoal; then the whole platform should be coated with coarse brickdust and lime, in proportions of three of brickdust to one of lime, wetted and well mixed, and laid on quickly, say an inch thick, and left to harden. On this last we would then lay the floor-boards, tongued and grooved together as usual. The earthen pots would then be framed in, as it were, by the sills of the house. Instead of charcoal, any sort of dry rubbish may be used for filling in between the pots, but for a sanitary purpose the charcoal is best. No joists are required in such a floor as this, and in many sections of the country it would prove economical as well as comfortable. For barns and outhouses generally, this mode of flooring ought to commend itself, while the covering of flooring-boards might then be dispensed with. But, instead of the boarding, it will be necessary to make the covering or cement coat two inches thick. Where pottery is cheap, the above is a very desirable mode of forming a thoroughly dry cottage floor, or one suitable for barns, etc., as being rat-proof —no mean characteristic of a floor in such situations. For dairies and cellars it is excellent, as ensuring that great desideratum—dryness.—*American Technologist.*

◆

THE LIVERPOOL BUILDING TRADES.

THE following scheme has been submitted to the Master Builders' Association by the Secretaries of the Amalgamated Joiners' Society, the Joiners' General Union, the House Painters,' Bricklayers', Plasterers', and Plumbers' Unions:—

OUTLINE OF A PLAN FOR THE FORMATION OF A COURT OF CONCILIATION AND ARBITRATION IN THE BUILDING TRADE.

The constituency is to consist of all master builders, tradesmen, and operatives engaged in the building trade, or in any of its branches.

The court is to be extra-judicial, and to consist of an equal number of employers and employed, to be elected at an annual meeting of each body. Each branch of the building trade to send six masters and six operatives; an independent president to be chosen at the first meeting of arbitrators, and a vice-president to act in case of the illness or absence of the president.

The court to be sub-divided into three sections:—

1. A court of conciliation, to consist of one employer and one operative, to be chosen from the branch in which the dispute has arisen.
2. A court of arbitration, to consist of the president, six employers, and six workmen, representing the branch in which the dispute has arisen.
3. A special court, to consist of the president, one employer, and one workman from each branch of the trade.

The object of the court of conciliation shall be to conciliate parties in whose establishment minor disputes have arisen; should they fail in doing so the case to be referred to the court of arbitration.

The court of arbitration shall serve as a court of appeal from the conciliators, and for the settlement of differences which may arise in any particular branch of the trade.

The special court to be for the settlement of differences affecting the trade in all its branches, and a court of final appeal from the court of arbitration.

In bringing disputes before the conciliatory court the parties shall appear in person, the employer being allowed to send his foreman: should the dispute have arisen with such foreman the proceedings should be private. Before the court of arbitration and the special court the parties may appear in person, or be represented by counsel or attorney, as in the county court, and the proceedings shall be public.

The court shall take cognizance of all differences that may arise; but, in case the subject of difference be rate of wages or hours of labour for the future, then their decisions shall be binding for six months.

In all cases the majority shall decide, and if the votes be equal the president shall give the casting vote.

◆

BUILDERS' BENEVOLENT INSTITUTION.

THE twenty-third annual general meeting of the friends and subscribers of the above charity was held on Thursday (28th ult.), at Willis's Rooms, King-street, St. James's, Mr. J. M. Macey, the president of the past year, in the chair. The purpose of the meeting was to receive the report for the past year, to elect a president, treasurer, directors, and auditors for the year ensuing, and other matters connected with the welfare of the institution.

Mr. Harris, the secretary, read the report, as follows:—

"In presenting to the friends and supporters of the Builders' Benevolent Institution the report for the past year, the directors regret that in consequence of the general depression of trade, and more particularly that connected with the building interests, the receipts for the past year have suffered a slight diminution, but they hope that, with returning prosperity, and the kind assistance of their friends, they may be again enabled to resume continued and gradual increase in the funds of the charity which has, since its formation, been one of its most cheering and distinguishing features.

"An election of pensioners was held at Willis's Rooms in May last, when two pensioners, one man and one woman, were elected. The total number of pensioners is now 44, viz, 22 men and 22 women. The pensioners last elected were Mr. Richd. Burdett and Mrs. Martin.

"During the year, the following pensioners have died:—William Standfast, elected November, 1863, died Oct., 1869; Thomas Martin, elected May, 1865, died Oct., 1869; John Jenkins, elected May, 1864, died Feb., 1870; Elizabeth Rees, elected May, 1851, died Oct., 1869; and Mrs. K. Edmunds, elected May, 1860, died Dec., 1869.

"The amount of stock, Three per cent. Consols, purchased during the past year is £325 5s., £216 16s. for the Relief Fund, and £108 9s. for the Building Fund, making a total of £15,075 14s. 11d., viz, £11,923 5s. 8d. for the Relief Fund, and £3,152 9s. 3d. for the Building Fund.

"The directors earnestly appeal to their supporters to increase the funds of the charity by endeavouring to obtain amongst their friends and connections additional annual subscribers, so that they may be enabled to elect more, if not all, of the candidates who are so anxiously looking forward to receive the benefits conferred by the Builders' Benevolent Institution."

The report was received and adopted, together with the appended balance sheet.

Mr. Plucknett moved a vote of thanks to Mr. Macey for his performance of the onerous duties of president for the past year, which he had carried out with the greatest satisfaction. This vote was unanimously passed, and it was announced that Mr. A. J. Mansfield had consented to become President for the ensuing year.

◆

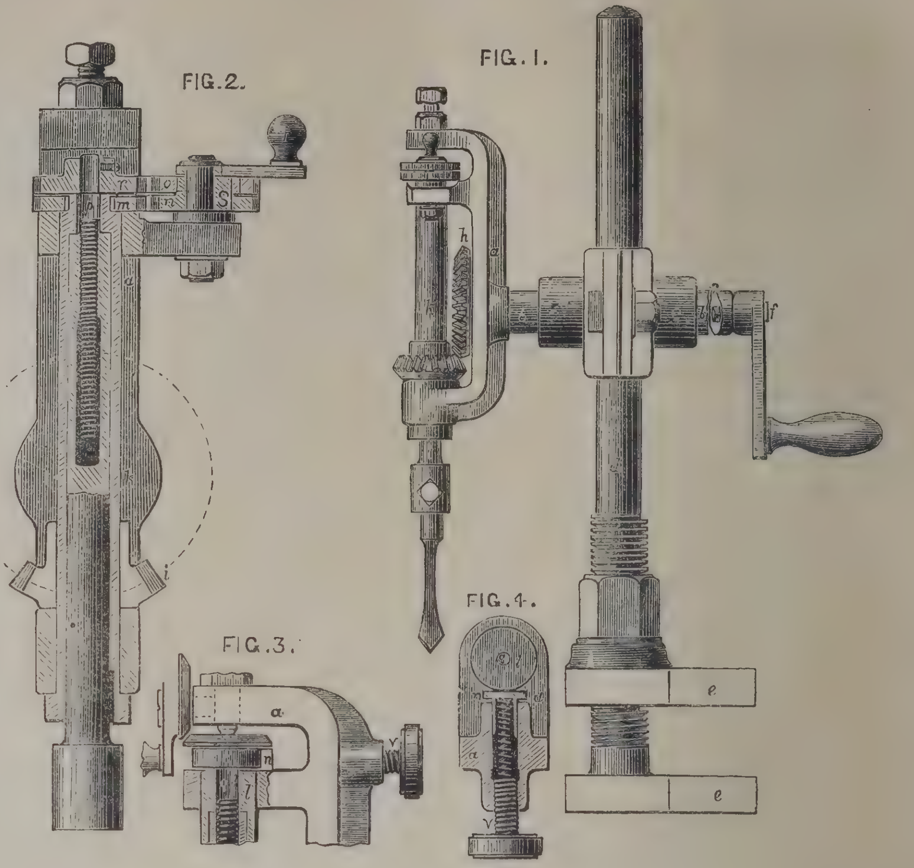
PORTABLE DRILLING MACHINERY, Etc.

We give this week, as a subject for illustration, the invention of improvements in portable drilling machinery, patented by Messrs. Spencer and Consterdine, of Hollinwood, near Manchester.

The invention is designed for the purpose of producing a portable self-acting adjustable feed drilling tool, that can be readily adapted and "clamped" to heavy pieces of machinery or iron bridge work, for the purpose of drilling or boring holes in the same at a speed proportionate to the class of drill and work acted upon. The improvements may be described as follows:—

A frame is provided for supporting the drill spindle and holder, which is secured to a long projecting horizontal boss, in and through which the shaft driving the drill spindle is supported, and gives a revolving motion to the drill spindle through the bevel gearing, the horizontal boss being supported by a bearing that will allow of the horizontal boss and frame supporting the drill to be turned and placed at any angle that will adjust it to the work it is required to operate upon. The bearing supporting the horizontal boss is provided with a clip formed at right angles, that will allow of its being secured at any height upon a vertical bar, the bottom end of which is provided with adjustable jaws, by which the tool is attached to the piece of work to be operated upon. The feed to the drill, when revolving, may be accomplished by means of differential wheels, the carriers being mounted upon an eccentric stud that will admit of the wheels being thrown into and out of gear; this arrangement of driving gear will give one regular feed to the drill, but in order to give a feed to the drill when revolving according to the class of hole and work it is operating upon, the internal screw is actuated, giving the downward motion to the drill by means of a disc secured to the internal screw, and against the periphery of which, whilst revolving, a yielding pressure is exerted that can be adjusted by a set screw to give any amount of frictional resistance desired, thus enabling the feed to be diminished or accelerated in accordance herewith.

Fig. 1 represents in elevation the drill supported by its swivel bearing on the vertical rod, supplied with "clamps" for securing the drill, and adapting it to the metal it has to operate upon. Fig. 2 represents in vertical section the drill spindle and its actuating screw, employed through the medium of the differential gearing to give a uniform feed to the drill when revolving; fig. 3 represents a detached front section of the top portion of the framing and feed screw, in which is shown an arrangement of friction wheel secured to the actuating feed screw; and fig. 4 represents a sectional plan view of the same.



PORTABLE DRILLING MACHINE.

In these figures *a a* is the frame of the drill, from which the long boss *b* projects for the purpose of being supported by the adjustable boss *c* secured to the vertical rod or bar *d*, the bottom of which is provided with adjustable clamps *e* employed for securing the drill to the work it has to perform upon. The shaft *f* supplied with the handle *g* passes through and freely revolves in the long boss *b*; its extremity, projecting through the frame *a*, is supplied with a bevel wheel *h* gearing into and driving the pinion *i* secured to and giving motion to the sleeve *k* and drill spindle *l*. The sleeve *k* in figs. 1 and 2 has secured to its upper end a wheel *m* that gears into the carrier wheel *n*, which transmits motion through the second carrier wheel *o* to the wheel *p* secured to the actuating feed screw *q*. The difference in the number of teeth in these wheels slightly reduces the speed of the screw *q*, thereby effecting a uniform downward feed to the drill spindle *l* during the time it is at work on a piece of metal. The carrier wheels *m* and *o* are thrown into and out of gear with the wheels *m* and *p* by the handle *r* and eccentric position of the stud *s*.

The modification of self-acting feed shown in figs. 3 and 4 consists in securing to the actuating feed screw *q* a friction wheel or disc *t*. Against the periphery of wheel *a*, yielding pressure is exerted through the medium of the sliding piece *n* and set screw *v*; thus, according to the amount of pressure the piece *u* is caused to exert against the periphery of the disc *t* will the screw *q* be retarded, consequently giving more or less feed to the drill in accordance with the amount of pressure so exerted.

◆

NAILS FOR OUTDOOR WORK.

Every one is familiar with the fact that a piece of rusty iron, wrapped in cotton or linen cloth, soons destroys the texture of the fabric. A rusty nail, for example, if laid upon a few rags, will soon produce large holes in them, or it will, at least, render every point that it touches so rotten that the cloth will readily fall to pieces at these points, and holes will be produced by the slightest hard usage. Iron, during the process of rusting, tends to destroy any vegetable fibre with which it may be in contact. This explains, to a certain extent, the rapid destruction of the wood that surrounds the nails used in outdoor work, whereby the nail is soon left in a hole much larger than itself, and all power of adhesion is lost. Part of this effect is, no doubt, due to the action of water and air, which creep along the surface of the nail by capillary attraction and tend to produce rottenness in the wood as well as oxidation in the iron. But when we compare an old nail hole with a similar hole that has been exposed during an equal time, but filled with a wooden pin instead of an iron nail, we find that the wood surrounding the wooden pin has suffered least, and we may, therefore, fairly attribute a destructive action to the rusting of the iron. It might, at first sight, be supposed that, as the oxide of iron is more bulky than the pure iron, the hole would be filled more tightly and the nail help more firmly to its place. But, although this effect is produced in the first instance, yet the destruction of the woody fibre and the pulverization of the oxide soon overbalance it, and the nail becomes loose. Of course, the iron itself being also destroyed, its strength is diminished, and we have, therefore, a double incentive for preventing or diminishing the action that we have described. The only way to prevent this action is to cover the nail with some substance that will prevent oxidation. This might be done by tinning, as is common with carpet-tacks. Coating them with oil or tallow would be efficient if the act of driving did not remove the protecting matter entirely from a large portion of the surface. But, even then, it will be found that the oil or fat is stripped off the point, and gathered about the head in such a way to prevent the entrance of air and moisture into the hole. The most efficient way to coat nails with grease is to heat them to a point sufficient to cause the grease to smoke, and then pour the grease over them, stirring them about in a pot or other vessel. When the nails are hot, the melted grease will attach itself to them more firmly than it would have done if they were cold—indeed, so firmly that it will require actual abrasion of the metal to separate it. In erecting fences, laying plank or board sidewalks and the like, it becomes an important matter to secure the nails against the influence that we have mentioned, and yet the work must be done rapidly and cheaply. Nails may be readily prepared as described, or they may simply be dipped in oil or paint at the moment when they are driven in. In cases where it is not advisable to paint the whole fence, it is a good plan to touch the head of every nail with a brush dipped in oil or paint of the same colour as old wood.

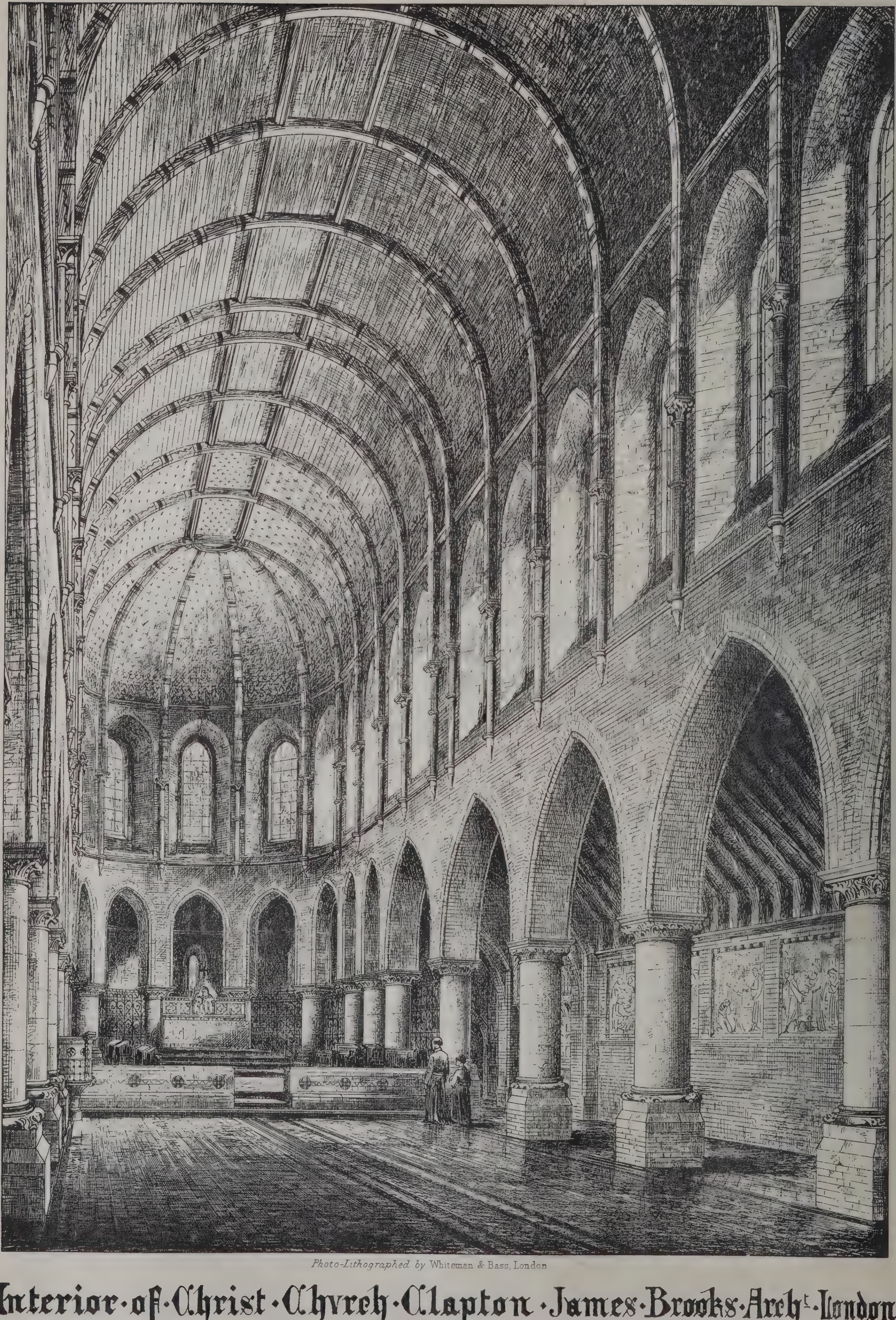
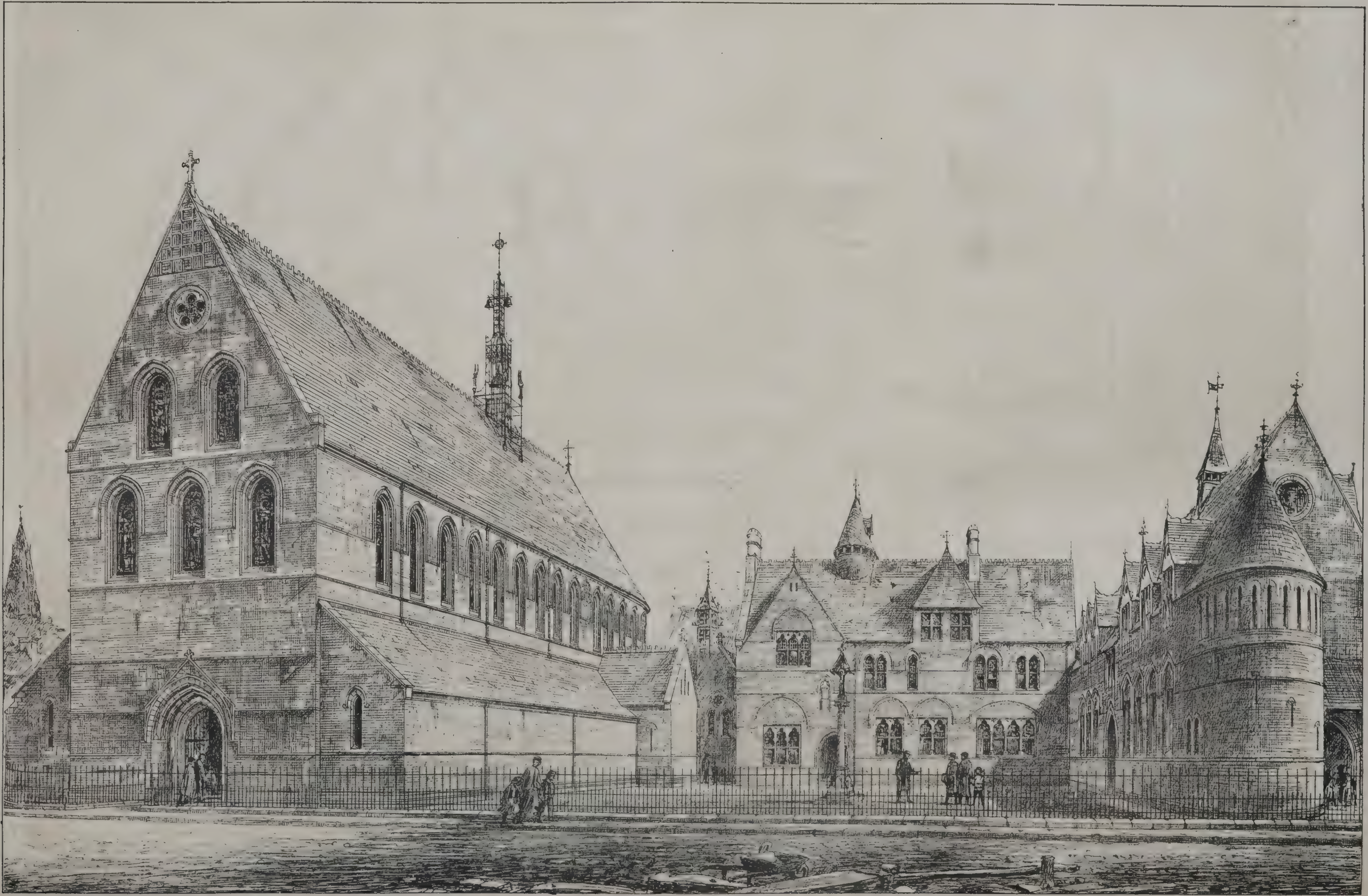


Photo-Lithographed by Whiteman & Bass, London

Interior·of·Christ·Church·Clapton·James·Brooks·Archt.·London



Lithographed by Whiteman & Bass

Furniture & Decoration.

◆

THE THEORY AND PRACTICE OF MODERN HOUSE PAINTING.

By An Experienced Workman.

PREPARATORY PROCESSES.

BEFORE proceeding further we have a few words to say in reference to the manner in which the plastering of the walls and ceilings of our houses is done; and although not strictly speaking a part of the subject we are treating of, yet it is so intimately connected with it, and is in itself of so much importance, that we could scarcely pass it by without pointing out some of its shortcomings, but with very little hope of a remedy. No one having any experience in the decorations of dwelling rooms will have failed to notice the utter worthlessness of most of the plastering of our walls and ceilings; in fact, this is one of the many difficulties the decorator has to contend with, and is so common an experience that we have almost got to consider the evil as a matter of course and a necessary consequence of walls being plastered. We have invariably found that bad work is the rule and good work the exception. If we take ninety out of every hundred middle-class houses, we shall find that neither the walls nor ceilings are true, that the lines of the mouldings of the cornice are out of square, and the angles of walls out of plumb—in and out, to use a homely phrase, like a dog's hind leg; that the surfaces of the walls are uneven and full of hills and hollows, and if we place the edge of a long straight-edge upon the wall it stands upon the tops of the hills and leaves open spaces and valleys between, and here and there special protuberances, which neither add to its beauty or usefulness. If we examine the enrichments of the cornice, which are cast in lengths and require great care and nicety in fitting together and in keeping at one uniform level, we find in the majority of cases that they are badly joined, uneven, and vary very much in their projection, and thus look, and are, clumsy. When enriched ornament is correctly put up, the ornament should be so arranged that it will come in equally at each corner or angle. This is effected when the room has unequal sides by paring a little off each length or casting of ornament, and which paring is not perceived if properly done, or in some cases adding a little, as the case may be; but in many cases this necessary trouble is not taken, and the consequence is that we may not, and do not see, two corners alike in the same room. In other cases, we may see here and there in the length of the cornice of the side of a room a defect or break in the ornament in two or three places; yet the angles or corners will be all right. In these instances the plasterer has reduced one or two lengths of the ornament in order to make the corners come in right, instead of taking the trouble to reduce each length of casting and so conceal the means by which it is attained. In panelled ceilings, when much enriched ornament is used, these defects are very common. On the other hand, in first-class work the architect or his deputy designs the ornament and sees to getting out the working drawings for the modeller to work from, and looks well after the fixing of the castings in their place, and, as a matter of course, we thus get good work; but in the greater number of instances this is not the case, and the result is that we have, in addition to the evils enumerated above, a jumble and mixture of styles in the same room, and even in the same cornice. We may and do frequently see Gothic ornament in a Greek or Italian house; and in numerous cases the plasterer does not take the trouble to make new moulds or cast new ornaments for the work, but uses just what he may have by him or in stock, regardless of rule or propriety, and thus we get, perhaps, one moulding Greek, the next in the same cornice Gothic, the centre flowers of any known or unknown style, and so on *ad libitum*. Now this is a state of things greatly to be deplored, and one that calls loudly for a remedy. No doubt one cause is merely ignorance of the principles and laws of architectural ornament, and this will account for some of the blunders thus made; but the great cause of such discreditable work is not far to seek. We have abundance of good workmen, but prices are cut down to so low a figure that the contractor cannot do his work honestly and at the same time get a living profit out of it, therefore he causes the work to be done in a scamping manner. We also know by experience that the result is just such work as we have been describing—unsatisfactory and discreditable alike to all concerned. The difficulty of doing anything with it to put it right is one that all painters have to contend with, and it is quite certain that after all has been done that can be done with such walls they remain a standing reproach both to workman and employer.

In the preparation of walls for painting much care is required; in the first place, to clear off all protuberances or small projecting bits of mortar, &c. This may be effectually done either by rubbing the surface of the wall with a flat piece of wood, or with a large lump of pumice-stone. It may occasionally be necessary to use a flat piece of wood covered with sand or glass paper for that purpose. It is always best, and most economical, to make the wall as smooth as possible before commencing painting, as we thus save much after-labour when the wall is well rubbed down. We next proceed to stop or point up every hole, crevice, crack, or rough or uneven place, with plaster of Paris and a little finely-screened lime (technically called putty). In doing this care should be taken to stop and fill up the tops of the skirting-boards, round the architraves, and everywhere should be properly seen to, so that no place shall be missed. If this be done carefully at this stage it will save much trouble and time afterwards. When the plaster is dry, every place which has been stopped should now be rubbed level with fine sand-paper on a flat board (that is, a flat-sided piece of deal about about 4in. square and 1in. thick—the sand-paper should be folded over this, and rub with the flat side). This requires to be rubbed gently and softly, without much pressure. If much pressure is used the plaster will be broken and become rough, but if it is done properly, the stopping will be brought down to the level of the wall and will not be perceived when the wall is finished; but if carelessly done, every place which has been stopped will be clearly seen when the wall is finished, which is an ugly defect. Many painters leave the stopping until the wall has had one coat of paint, and then stop the holes with hard stopping—*i.e.*, white lead and whiting mixed together to the consistency of common putty. Some make it of dry white lead and japanners' gold size, or some quick varnish is used with the white lead. We prefer to use the first-named mixture, as it is not so liable to crumble or crack. We object to this practice when it can be avoided, as it is scarcely possible to point up the holes without leaving a projection, and still more difficult to rub it down to a level surface, except it is allowed to stand a long time to get thoroughly hard, and then it must be rubbed down with pumice-stone and water. Therefore, for producing an uniform level surface, the first plan is the best and the quickest, and, with new walls, safest. Many painters use glue size and whiting for this purpose, but this mixture is almost sure to crack and sometimes will crumble to powder, and its power of contraction is so great, if too much size is used, that it is sure to dry up and contract, thus leaving a crack all round the hole stopped. It may be as well here to state that the first process of pointing up the walls and rubbing down is equally applicable whether the walls are finished in oil or distemper colour. The walls being now stopped and rubbed down should be well dusted, and the room well brushed out, the floor washed, planks well cleaned, and every means should be taken to keep all dust and dirt down, as this is a fruitful cause of much rough work. Every care may be taken to mix and strain the paint and to have the brushes clean, and all be in vain, simply because the precautions above named have been neglected. For when there is much dust on the floor and on the planks which are being used, the moving about and friction of the shoes of the men upon them causes the dust to rise and settle on the walls and other work in progress, and on brushes and in the paint kettles. Thus, we create the very evil we wish to avoid. Precautions should also be taken before commencing painting to cover up the floors, so that they may not be spotted or daubed with paint. Drop cloths are used for this purpose, that is, sheets of common wrappering, or old sail cloth will do. They should be about 7ft. long and 3ft. wide. These may be laid all round the room, or the workman may carry one along with him and lay it just where he is working; but when so used and moved they are apt to carry dust with them, and except great care be taken will do more harm than good. But the best plan is to cover the whole of the floor with strong brown paper, firmly pasted down to the floor before the room is even commenced; two layers is, of course, better than one. This is an effectual preventive, both against paint spots and also in preventing the grit from injuring the floors. Men coming into the room with dirt upon their shoes accompanied with grit tread it into the wood and thus spoil the boards, which the above plan prevents. When the room is finished, or nearly so, the paper is easily removed by wetting with water, and the floor is preserved uninjured.

(*To be continued.*)

◆

VIEWS OF CHRIST CHURCH, CLAPTON.

THE subject of our illustrations this week is one of the designs submitted in competition for a new church at Clapton, Mr. James Brooks, 11, Serle-street, being the architect. The accomodation required was for 700 adults, at a cost not exceeding £5,000. Economy being the primary consideration, brick was chosen as the material to be used, except in the columns, caps, and bases; moulded bricks for jambs, arches, and strings. Nothing could be plainer or more simple than the treatment, yet nothing could be more impressive and dignfiied both in the interior and exterior of the building. The main body of the church consists of a broad nave and narrow aisles which are windowless. The whole light is obtained from large and lofty clerestory windows. The chancel is apsidal, having an ambulatory running round it and connecting the aisles. The interior has been so designed that at a future time decoration may be added in panels in the aisles, the stations, and in the roof; subjects from the life of Our Lord.

◆

ESSEX ARCHÆOLOGICAL SOCIETY.

THE eighteenth annual meeting of the Essex Archæological Society was held at Braintree on Tuesday week. Amongst the architects present were, Mr. Chancellor, F.S.A., and Mr. C. F. Hayward, F.S.A. Mr. T. Sutton Western occupied the chair. The annual report (read by the secretary, Mr. H. W. King) stated that since the last meeting, at St. Osyth, twenty-seven new members have been elected, and four were to be proposed for election at the meeting, making in all the largest accession the society has received for many years. Seven members have been lost to the society by death or resignation since the last meeting. A new illustrated catalogue of antiquities, partly the property of the Corporation of Colchester, partly of the society, and partly lent by the several owners of the exhibition, has been recently issued to members. The first part of volume V. of the Journal of the Society's "Transactions" is nearly completed. The report concludes by expressing an opinion that if but twenty new members are enrolled annually the vitality of the society will increase and its usefulness will be greatly extended. The report having been adopted,

The Rev. B. Lodge, Rector of St. Mary Magdalene, Colchester, read a paper "On a Roman Sepulchral Monument found at Colchester." It is the figure of a Roman centurion in full armour, carved in bold relief, more than half the natural height and dimensions, *i.e.*, 3ft. 7in. The exact height of the canopy under which it stands, including base, is 6ft., and the width 2ft. 4in. The figure has been fractured just above the feet, one of which is slightly imperfect, the remainder being in excellent preservation. The inscription was as follows :—

M· FAVON· M· F· POL· FACI
LIS· ▷ : LEG· XX· VERECVND
VS· ET· NOVICIVS· LIB-POSV
ERVNT· H· S· E·

The interpretation of this is stated to be—Marcus Favonius Marci Filius Pollia Facilis. > (Centurio) Legionis XX. (Vicesimæ). Verecundus et Novicius Liberti Posuerunt—Hic Situs Est.

The Rev. E. J. Hill, Rector of Panfield, and Rural Dean, then read a paper entitled "A few Brief Notes of Objects of Interest in the neighbourhood of Braintree." Speaking generally of the neighbourhood, he said that to the archæologist Braintree and its neighbourhood is comparatively unbroken ground. It is not rich in ecclesiastical edifices, in consequence of the dearth of stone, so that we find generally rubble work of coarse flints ; a soft stone called "clunch" being used for windows and internal decorations, and a hard stone called "barnack" for buttresses, labels, and quoins. There is also much brick-work, some towers of late date being of that material, as at Rayne. In domestic architecture, interesting specimens abound of old halls and manor-houses, mostly of brick, with Tudor windows of clunch, and handsomely clustered chimneys, and here and there internally some good wood-work. In passing through Bocking and the villages of the district we meet with picturesque timber dwellings, many of the sixteenth century in date, with projecting gables, oak barge-boards, and plaster pargetting. Two in Bocking bear their dates, one 1595, and the other a few years later. In Gosfield there is an elegant specimen of a single-fluted chimney ; and in Wethersfield are many examples with a variety of detail. Leaving generalities, and coming to the subject-matter of his paper, Mr. Hill first described at great length the ancient parish church of Great Raines, dedicated to S. Michael and All Angels, *circa* 1349, after which he proceeded to give brief descriptions of the Church of All Saints, Rayne Parva (Early English, with modern nave and chancel) ; the restored church of S. James, Saling Magna ; Saling Parva, with its circular tower of flint and Early Second Pointed windows in the upper stage ; Holy Trinity, Great Bardfield ; S. Catherine, Little Bardfield, with its Norman towers ; S. John the Baptist, Finchingfield ; SS. Peter and Paul, Black Notley ; the Church of the Blessed Virgin, Panfield ; S. Mary, Bocking ; S. Andrew, Shalford ; S. Mary Magdalene, Wethersfield, and Shalford Hall. After a paper by the secretary "On the ancestry of Sir Denner Strutt, Bart., the Cavalier," the party partook of luncheon, and afterwards visited many of the places named in Mr. Hill's paper ; and this excursion over, the proceedings were brought to a close.

◆

BOOKS RECEIVED.

THE fourth edition of Sir William Fairbairn's work *On the application of Wrought and Cast Iron to Building Purposes* (London : Longmans, Green, and Co.) will be welcomed by all interested in the changes which have occurred since the appearance of the last edition in 1864. A considerable amount of new matter is added, thus making the book in a greater degree than heretofore a reliable and standard authority on the subjects on which it treats.—*Pewtner's Comprehensive Specifier*, edited by William Young (London : Longmans), is a sort of handy-book intended as a work of reference for the young architect and builder, from which may be extracted the various items of a specification with considerable saving of time.—*A Handy Book of the New Law of Bankruptcy*, by William A. Oliver (London, Simpkin, Marshall, and Co.), appears to be a careful and reliable guide to the New Bankruptcy Law, and should be consulted by all interested in the changes in commercial relations consequent on the working of the Act.—*The Report of the Streets' Committee of the City of London Commissioners of Sewers on the Val De Travers Compressed Asphalte Carriage-way Pavement*, by William Haywood, M.I.C.E., F.R.I.B.A., contains an amount of information valuable to those who are now following out the solution of the problem as to the advantage or otherwise of substituting asphalte for granite as a road material. Mr. Haywood's conclusions are that the asphalte pavements, while convenient and capable of being kept clean and safe for traffic in all weathers, will prove more expensive than granite pavements (though not more expensive than macadamized roads), and that it is desirable to give the material a more extended trial before finally deciding on its merits. The Streets' Committee recommend that the whole of the Poultry and Cheapside be forthwith paved by the Val de Travers Company with their asphalte, that this trial may be fairly made.—*The Disposal of Town Sewage*, by R. W. Peregrine Birch, C.E. (London : E. and F. N. Spon), is a paper read before a supplemental meeting of the students of the Institution of Civil Engineers, and to which a Miller prize was awarded. Some well authenticated particulars of some of the principal schemes for sewage utilization at present carried out or in progress are given, together with a few notes upon the true theory of filtration and the self-purifying tendency of polluted streams.

◆

ARCHITECTURAL AND ARCHÆOLOGICAL SOCIETIES.

Birmingham and Midland Institute.—Archæological Section.—The last excursion for the present year took place on Wednesday last, when the members of the section visited Baginton, Stoneleigh, and Kenilworth. On the way to Stoneleigh Abbey, the journey was broken at Baginton, in order to pay a visit to the parish church, which is of thirteenth century date, and is chiefly noticeable from having three narrow arches in place of the usual chancel arch. On reaching Stoneleigh, the almshouses, Motslow-hill, on which the tenants of King Henry II., in that manor, were compelled every three weeks to do suit to the Manor Court which was held here, and the parish church, were visited. In the church there are some good examples of Norman work, the enriched chancel arch, and the fine font removed some years ago from Maxtoke, being well worthy of examination. There are several monuments and effigies in the church and mortuary chapel of the Leigh family, to which the attention of the visitors was directed. The members of the section then proceeded to Stoneleigh Abbey. The visitors after luncheon drove to Kenilworth Castle, where the Rev. E. K. Knowles described the ruins and explained the works in progress for clearing and preserving them. Dinner was provided at the King's Arms Hotel at five o'clock, after which a visit was made to the parish church, where an opportunity was found of studying more rich Norman work, and to the adjacent ruins of the Priory, where there is a picturesque gateway of the fourteenth century.

Somersetshire Archæological and Natural History Society.—As has been previously announced in the Building News, the twenty-second annual meeting of this society is appointed to be held at Wincanton on Tuesday, August 23rd, and two following days, under the presidency of Sir W. C. Medlycott, Bart. On the first day the president's address will be delivered, the business transacted, papers of local interest read, and a visit paid to the church. On Wednesday there will be an excursion to North Cadbury, Cadbury Camp, Compton Church, and Mapperton ; and on Thursday to Temple Combe, Stowell Milbourne, Wick Encampment, Milborne Port, and Hentsridge. A local museum will be opened under the management of the curator, Mr. Bidgood.

St. Alban's Architectural and Archæological Society.—This society held a meeting on the 20th ult., when papers were read as follows :—"On Bell Inscriptions," by Mr. Ridgway Lloyd ; "On Sandridge Church," by the Rev. O. W. Davys ; and "On Antiquities in and near East Herts," by Mr. Pollard.

Wiltshire Archæological and Natural History Society.—The annual meeting of this society has been fixed for September 14th, 15th, and 16th, at Wilton, under the presidency of Mr. Charles Penruddocke, of Compton. It is in contemplation to visit Wilton House, Wardour Castle, Fonthill Abbey and House, Compton Park, and Longford Castle, as well as to pay a lengthened visit to the Blackmore Museum at Salisbury. Messrs. Swayne, Nightingale, and Stevens are the hon. secs. for the meeting.

The third general meeting of the Architectural and Archæological Society of Durham and Northumberland was held on Tuesday last at Aycliffe, Heighington, and Walworth Castle.

◆

PARLIAMENTARY NOTES.

New Law Courts.—Mr. G. Gregory, on Thursday last, moved that in the opinion of this House the building of the New Law Courts should be proceeded with without further delay. He was happy to find that the First Commissioner of Works cordially agreed with the object he had in view in putting that motion on the paper, and therefore it would not be necessary for him to inflict upon the House a speech in support of his motion.—Mr. Alderman Lawrence objected to the course taken by the Government with respect to the plans. They had not laid down on their block plans any approaches to what he might call a large new law market. He thought that approaches to the market were an integral portion of the plan, and ought to be laid out and provided by the Government.—Mr. Ayrton said that the estimate for the preliminary works would be laid on the table on Friday ; therefore it was not desirable to anticipate a discussion which was sure to arise when the votes on the subject came under the consideration of the House. The question raised by Mr. Alderman Lawrence was foreign to the legislation that had already taken place, but his hon. friend and his constituents might set a good example by taking measures to remove the structure which public opinion did not sanction either on account of its beauty or antiquity, and which was a serious obstruction between Fleet-street and the Strand.

Southwark Park.—Mr. Locke called the attention of the House to the intended appropriation of a large portion of Southwark Park for building purposes by the Metropolitan Board of Works ; and moved, "That in the opinion of this House the whole of the land purchased under the Act of 1864 (the Southwark Park Act) should be preserved as a park for the use and recreation of the public." Mr. Secretary Bruce supposed that scarcely any hon. member would consider even 163 acres too much for the recreation of the population on the south side of the river. But that was not the question before the House. The Metropolitan Board of Works, being a representative body, chosen by the ratepayers, were entrusted by Parliament with the purchase of land for the park at Southwark, and by the Act which conferred that power upon them permission was given to set aside some portion of the land which they bought for building purposes. It would be admitted that this was a judicious course when it was considered how the making of the park would increase the value of the adjoining land ; and the Board, having purchased more land than was ever proposed to be appropriated to the park, were now able to recoup the ratepayers by setting it aside for building. By setting aside sixteen acres they hoped to return the ratepayers something like £36,000, but, apart from the question whether they had done their duty in the matter, it would be beneath the dignity of the House to pass a resolution calling on the Metropolitan Board of Works not to execute the powers conferred upon them by an Act of Parliament. If the hon. member disapproved of the course they were taking he had better move to repeal the Act of Parliament, or, if he thought they were exceeding their powers, the remedy was to be found in an application to the Court of Chancery. Probably, however, the present motion would have the effect of inducing the Metropolitan Board to reconsider their decision, and he, for one, should be glad if the result were to induce them to set aside a larger portion of the land than was proposed for the recreation of the people.—Mr. Locke then withdrew his resolution, and gave notice that next session he should ask leave to bring in a bill to restrain the Metropolitan Board from diminishing the area of Southwark Park.

The New Courts of Justice.—On Tuesday, on the vote of £21,450 to defray the cost of the purchase of the site of the New Law Courts, after some observations from Mr. Sclater-Booth, Mr. Stansfeld, and others, Mr. Ayrton said that this vote arose out of an Act of Parliament passed five years ago, by which the sum of £1,500,000 had been appropriated for the erection of the Palace of Justice, and for the purchase of land on the north side of the Strand in connection therewith. The whole subject was referred to a Royal Commission instead of being entrusted to the Treasury, and the consequence was that the expenditure had been increased to £3,250,000. In this state of things the Chancellor of the Exchequer recommended him to put himself in communication with the parties. The value of the land had been increased from £750,000 to £800,000, but the character of the building was considerably altered, and it was arranged that the block of buildings for the courts of justice should be so constructed as to make it applicable to the various courts and buildings necessary to carry on the actual business of the courts of justice. The commissioners acceded to the altered plan, and the building would be erected in accordance with this altered plan. The present estimate had only reference to the clearing of the ground and to laying the foundation of the building. This was all that could be done previous to the estimates coming before the house next year.—Mr. G. Gregory said that the plans laid before the Royal Commission were so wide that they were justified in the course they had come to in the first instance; but they entirely agreed with the altered plan which had been submitted to them. He believed the new plan would give all the accommodation that was necessary to carry out the administration of justice.—Mr. Whitwell said he supposed the estimates included the approaches to the new courts of justice.—Mr. Alderman Lawrence said that the new block of buildings was different from that which had been previously laid before the House. It was of great importance that public buildings, on which large sums of money were expended, should not only be useful for the purposes for which they were intended, but that they should have some pretensions to architectural beauty, and also that they should have proper approaches. In the present case the ground about the building was not to be utilised in a proper manner. It was not intended, apparently, to widen the Strand at that point, nor to set the building back from the Strand and from Carey-street. If Parliament did not provide for the creation of proper thoroughfares in this part of London they might be sure the legal interest would not do it. They would not allow a street to pass through Lincoln's Inn, and it might happen that Carey-street would be the only great thoroughfare leading from Chancery-lane westward. It was the great fault of most public buildings in the metropolis that their frontage was brought fully up to the line of the pavement, so that they had no approaches. That was seen in the London University buildings in Burlington-gardens. If it were arranged that the building should be sufficiently set back on the Strand side, there would be no indisposition to widen Fleet-street at Temple Bar, so as to admit of the passing of four vehicles abreast. He did not pretend to criticise the details of the plan, so far as related to the wants of the profession, but he felt perfectly competent to criticise the traffic arrangements of the plan, and they appeared to call for it. Every attention was paid to the wants of the profession in the building, and as he believed it would cost, before it was completed, two millions sterling, he warned the House that it would not be doing its duty if it did not see that proper approaches were provideded for the building. Mr. Beresford Hope was understood to give the plan his hearty approval, and after some further discussion the vote was agreed to.

Sundry Votes.—The following votes were then agreed to, to complete the amounts required:—£44,000 for acquisition of land for the New Palace of Westminster, and £13,000 for the erection of new houses in Downing-street for the Foreign, Colonial, and Poor-law Departments. £37,250, site for the enlargement of the National Gallery (Mr. Barry to be the architect, provided that he subscribes to the condition of his appointment). £44,000 for new buildings for the Departments of Science and Art. The vote of £644 for the Wellington Testimonial was withdrawn until the correspondence on the subject was produced. The next vote was a sum of £7,000 for erecting and maintaining certain new buildings in connection with the Post Office. Mr. Ayrton explained that the cost was owing to the arrangements recently made to carry on new telegraphic arrangements. A sum of £28,500 was then proposed for maintaining the harbour and breakwater of Alderney. A large sum of money had been already expended on this public work, and on a report made by Mr. Hawkshaw, an eminent engineer, the Government decided to carry out his recommendation so far as to continue the work, and Mr. Ayrton hoped the committee would agree to the vote. Colonel Sykes wished to know of what use was this harbour at Alderney, on which £1,300,000 had been already spent. Mr. White thought it would be far better to throw the island into the sea than to be expending the public money in this way. The vote was agreed to.

The British Museum —The next vote was one of £6,000 for the natural history collections of the British Museum. The Chancellor of the Exchequer explained that nine years ago these collections were so extensive that the greatest inconvenience arose in their exhibition, and M. Panizzi proposed that provision should be made for the erection of new buildings to receive these collections. The evil, which was considerable then, was worse now. After a careful examination of the subject by persons skilled in such matters, it had been determined that what was known as the "typical" mode of exhibitions was that which ought to be adopted in this case. A site on the embankment had been proposed, but that would not only be costly but it would be subject to conditions unfavourable to the object. Another plan had been the enlargement of the museum itself; but that too had been abandoned. They were thus led to look to the western suburbs as the most likely to aid them in the carrying out this work. It happened, fortunately, that the Commissioners of the Exhibition of 1851 had sold to the Government a plot of 16 acres of land, at Brompton, for £7,000 an acre, which was admirably adapted for the purpose. It looked upon the Cromwell and Exhibition-roads, in the vicinity of the South Kensington Museum, and the total cost of acquiring the site had only been £120,000, which he had been informed was less than its present value by £100,000. The outside estimated cost was £350,000, and as £400,000, and even £600,000, had been asked for the same work, it could not be deemed excessive. Those were the views he had to place before the committee, and he hoped the committee would accept them.—Mr. B. Hope remarked that the plan did not remove the old objection of separation from the museum, the library, the staff, and the antiquities, which had always been deemed one of serious consequence.—Mr. White characterised the present proposition as a gross Brompton job, and should give it every opposition in his power. It was entirely against the wishes of the trustees and every scientific man in London.—Mr. G. Booth denied that the scientific men of London were opposed to the separation, for when he was in office he received many applications in accordance with the vote now proposed.—Mr. Dillwyn believed the proposed movement was only the commencement of removing the British Museum altogether from its present locality.—Mr. Bentinck believed the great portion of the specimens of the natural history collection at the Museum were utterly useless. He wished, therefore, to know in what condition they were. The Chancellor of the Exchequer replied that all that was visible would be removed to Kensington. The Committee divided, and the vote was agreed to by a majority of 62.

Building Intelligence.

CHURCHES AND CHAPELS.

Arksey.—The parish church of All Saints, Arksey, Doncaster, was re-opened on Friday last by the Archbishop of York, after restoration at the hands of Mr. George Gilbert Scott, R.A. The first contract was for the restoration of the east end—the chancel, side chapels, and transepts. In taking out the modern east window the workmen discovered the original window, the jambs, which were beautifully decorated with painted scroll work, being quite perfect. Various other interesting discoveries were made. Under the floor and over the transepts was found what was considered to be the old altar table. It was about 4ft. long, but had evidently been broken. It has been lengthened to 7t., and is now placed on a strong oak frame table designed by Mr. Scott. The chancel has been paved with Minton's tiles and furnished with a new oak roof, and the roofs of side aisles and transepts have been repaired. The new seats in the side chapels and transepts are of red Petersburgh and pitch pine, stained and varnished, the chancel being provided with two rows of oak seats for the choir, and an oak lectern. The second contract was for the restoration of the nave, side aisles, and porch. The north aisle was the first commenced, and at the first it was found necessary to foot and concrete all the foundations to the level of the ground. The north door, which has been walled up for some years, has been re-opened and restored to its original character, and some of the buttresses of the aisle were taken down and rebuilt. A new traceried window has been filled in at the west end, and all the windows in the south aisle supplied with new tracery. The aisle roof has been repaired and re-covered with lead, and the nave provided with a new high-pitched roof of oak. Messrs. Anelay have executed the works, Mr. Stenton being their foreman. The entire cost will be about £3,000.

Bolton —The groined ceiling of the chancel of the new parish church of Bolton is now being decorated by Messrs. Clayton and Bell, of London. The whole of the elaborately-carved bosses are in gold; the ribs are also edged with gold, relieved by chevron ornaments, while in each panel, upon a groundwork of vellum, is the figure of a musician. Bands of colours, with the sacred monogram, also form a feature of the work, which is expected to be completed in about a fortnight.

Bowling.—On Saturday afternoon the memorial-stone was laid of a new Wesleyan Chapel at Prospect, Bowling, near Bradford. The building is being erected in the Italian style, from the designs of Messrs. Andrews, Son, and Pepper. Internally the building is 78ft. long by 49ft. wide, and the height of the ceiling from the floor is 30ft. In the basement are a school-room to accommodate 450 children, and four good-sized class rooms. A vestry, 25ft. long by 11ft. wide, is placed at the back of the chapel, and there is also a minister's vestry. Sittings will be provided for 768 persons.

Bury S. Edmunds.—A new font has just been presented to S. James's Church, Bury, by Mr. A. Bevan. The octagonal shaft of the old font, of Ketton stone, has been freed from its numerous coatings of paint, and is now restored to its former use as the shaft of the new one. Around it, at each of its angles, is a slender column of Purbeck marble, with stone base and foliated capital. On these rest the basin of Caen stone. The panels in the eight faces of the octagon are elegantly moulded, the principal mouldings being relieved with pateræ. Four of the panels are deeply recessed, and contain groups of sculpture relating to the baptismal rite, the four intermediate panels containing emblematical devices. The basin is lined with lead, and has an oaken cover, some excellent scroll work in hammered iron radiating from the handle by which it is lifted. The font is reached by two stone steps. The basin of the old font is buried beneath the new one, and the water from the latter will flow through the former as it passes away. The font has been executed by Messrs. Farmer and Brindley, of Westminster-road, London, from a design by Mr. G. G. Scott, R.A.

Dunstable.—On Thursday, the 21st ult., the Priory Church of Dunstable was re-opened, after being closed for a long time for purposes of restoration. Much remains to be done, however, and £4,000 is required. It is suggested that collections should be made throughout Bedfordshire in aid of the object.

Exeter Cathedral.—The Dean and Chapter of Exeter have finally adopted the amended plans of Mr. G. G. Scott for the restoration of the Cathedral, but have postponed the order for the execution of the work until they have ascertained the result of their appeal to the diocese for funds The amount required for the first part of the work is £15,000, of which £12,000 has been raised.

Great Ashfield.—The parish church of Great Ashfield, near Elmswell, Suffolk, was re-opened on the 19th ult, after restoration. The edifice, which is dedicated to All Saints, consists of nave and chancel, north aisle, south porch, and a square tower of flintwork, and is a well-proportioned, lofty, and spacious edifice, without galleries. The chancel has been almost entirely rebuilt, and covered in with a new roof of pine, and the east window has been filled with stained glass. The south wall of the nave, which had departed considerably from the perpendicular, has been entirely rebuilt from the chancel arch to the south porch. This part of the church contains some very good windows of the Perpendicular period. The whole of the interior stonework has been cleansed of its many coats of whitewash, and many of the windows have been newly glazed. The church is unusually rich in ancient benches, about a dozen of which have survived the indifference and neglect of bygone churchwardens. The organ, which has hitherto blocked up the entrance to the tower, now stands in the south-west angle of the nave, and the tower is thus thrown open to the church—a handsome Decorated window, of bold tracery, being disclosed to view. The works have been carried out by Mr. Simpson, of Stowmarket, under the direction of Mr. Jackaman, architect, Bury.

ISLINGTON.—A subscription is being raised for completing the exterior of the Roman Catholic Church of S. John the Evangelist, Islington, according to the original design of the architect, the late Mr. Scoles. This design includes the erection of two towers (to be called respectively S. Michael's and S. Peter's towers) surmounted by spires at the two extremities of the present front of the church. The towers were partially raised when the church was erected, so they will only require to be still further raised. The cost is estimated at £1,100, of which sum £400 is already promised.

KENSINGTON (Liverpool). — Christ Church, Kensington, on the high road to Fairfield, was consecrated by the Bishop of Chester on the 21st ult. The church, which is Romanesque in style, consists of nave, 94ft. long, 24ft. wide, and 57ft. high from floor to apex of roof, with aisles on either side 13ft. 9in. wide by 90ft. long; choir and chancel, 32ft. 3in. long; north transept, 19ft. by 18ft.; the south transept being occupied as an organ chamber and vestry. The nave is in five bays, the arches springing from piers of polished red granite, with Bath stone bases, heads, and capitals. The reredos is of Caen stone, and consists of a series of ten arches resting on small columns of green Irish marble. The roof of the church is open-timbered, and the whole of the church furniture, with the exception of the lectern, sedilia, and communion table (which are of oak), is of polished pitch pine, the seats being open. The altar floor, chancel, and wall round the font have been laid with encaustic tiles by Mr. Oppenheim, of Manchester. The hot-water apparatus is by Mr. Seward, of Lancaster, while the gas-fittings and all the ornamental ironwork of the church have been furnished by Messrs. Smith and Sons, of Birmingham. Externally the church is built of ordinary grey brick, with Stourton stone bands and red and black bricks in bands and arches. There is a tower and spire 150ft. high at the west end. Messrs. W. and G. Audsley, of Harrington-street, Liverpool, are the architects, the contractor being Mr. E. Hughes, of Miller's Bridge. The cost, including site, will be about £10,000.

LEEK.—On Saturday week the corner stone of a new building, to be used as a Wesleyan Chapel and Ragged School, in Mill-street, Leek, were laid at Leek. The building will be of plain Early English character, in red brick, with stone dressings, two stories in height, the lower story for school purposes and the upper for the chapel, in which 400 persons can be accommodated, the latter with a gallery at one end and class-rooms under. The cost will be £800. Mr. Sugden is the architect, and Messrs. Knowles and Tatton are the contractors.

LEWISHAM.—The new church of S. Mark, at Lewisham, was consecrated on the 20th ult., by the Lord Bishop of Rochester. A sermon was preached by the Lord Bishop of Victoria upon the occasion. A luncheon was afterwards provided, at which the Right Hon. the Earl of Dartmouth presided. A notice of the building appeared in our columns upon the occasion of the laying of the foundation stone in May last year. The building has been erected by Messrs. Carter and Sons, of Holloway, from the designs and under the supervision of Mr. William C. Banks, of 39A Gracechurch-street, London. The carving has been well executed throughout by Messrs. Mc Carthy and Smith, of Belvedere-road. The pulpit, the gift of a lady, and the font, the gift of the architect, are of elaborate design, with appropriate subjects carved thereon. The cost of the works to the present time, leaving out the upper part of tower and spire and the boundry walls, is about £7,100, the original contract being £7,050. A splendid organ, by Willis, of Camden Town, has been erected at a cost of £550. The lighting and ironwork were done by Messrs. Richardson Slade and Co., and the tile paving by Messrs. Hawes.

MENSTON.--The foundation stone of a new church, dedicated to S. John the Divine, was laid on Saturday afternoon. The building will seat 120 persons, and is estimated to cost about £1,000. The style, which is from designs by Messrs. Price and Linklater, architects, Manchester, is Early Gothic. It will be built of stone throughout. The contractor for the masonry is Mr. Lapish, of Hawkesworth; and for wood-work, Messrs. Longley Brothers, Leeds.

NORWOOD.—On Wednesday week the first stone of a new Roman Catholic Church was laid by the Right Rev. Dr. Morris, Bishop of Troy. The new church will be situated at right angles to the north-east end of the present convent, and will be from designs by Messrs. Goldie and Child, of Kensington-square, and is to be dedicated to the "Faithful Virgin." When completed it will consist of a nave 35ft. wide by 96ft. long, which will be occupied by the choir stalls of the nuns, and give accommodation for nearly 300 destitute orphans, who are maintained and educated under the care of the nuns attached to the establishment. Beyond the nave will extend a chancel and sanctuary of apsidal form, 41ft. 9in. long, making a total length of 138ft. The transept will be 25ft. wide and 38ft. long, and at a future period a second transept on the opposite side will be added, thus completing the cruciform plan of the church. It is intended at present only to build the nave and sanctuary, and to complete the designs as funds are obtained. The style of the building will be Geometrical Gothic, simply and broadly treated. The materials are stock bricks, with dressings of Bath stone and Portland, the latter being occasionally used internally. Messrs. Jackson and Shaw are the contractors.

THE JEWISH CEMETERY AT DOVER.—On Friday last the memorial stone of what is known in Hebrew phraseology as a "cemetery lodge" was laid at Dover. The building is made to answer the same purpose as a cemetery chapel in Christian places of interment. The building is being erected by Messrs. Tunbridge and Denne, from plans furnished by the borough surveyor, Mr. John Hanvey.

WALTHAMSTOW.—The memorial stone of a new Congregational Church was laid at Walthamstow on the 27th ult. The new building will be erected on the piece of freehold land on which the old meeting-house stood, a site hallowed by association with Dr. Watts and Dr. Dodridge, who often preached there. The estimated cost, exclusive of architects' commission and other extras, is £4,184 11s. The chapel is to accommodate 700 persons, and is in the Decorated Gothic style. Messrs. J. Tarring & Son are the architects, and Mr. W. Henshaw the builder.

WEM.—The memorial stone of a new Baptist Chapel has been laid at Wem. The material with which the building is being erected is local pressed brick, with dressings of Grinshill stone. The interior of the edifice will be finished with an open timber roof, ceiled under the spars, and is designed to have good acoustic properties. The contractors are Mr. T. Francis and Mr. H. Tommy, Wem, and the structure is being erected from the design of Mr. David Walker, architect, of Liverpool and London.

WINCHESTER.—The committee for building the proposed new church near the railway station has resolved to proceed with the building from a design furnished by Mr. Colson.

WORMINGFORD.—The church of S. Andrew, Wormingford, has just been reopened, after having undergone a thorough restoration at a cost of nearly £2,000. New open timber roofs have been erected over the nave and chancel, and the west end, previously blocked up with an old gallery and the organ, has been opened out, the organ being removed to the north side of the chancel. The whole of the nave and north aisle has been re-benched in solid oak, and the windows throughout (except three in the chancel, which have been filled with stained glass) are glazed with cathedral glass. The church is paved throughout in Maw's tiles. Messrs. Catchpool and Thompson, of Colchester, supplied the heating apparatus. Externally the roofs are covered with plain tiles. The old plastering has been stripped off the north and south walls, and the rubble work repaired. The tower has also been stripped in a similar manner, bringing to light a flint face in very good condition. The buttresses are new, and the internal walls have been re-stuccoed. A vestry has been added on the north side, and a new porch on the south side. Mr. Fred. Chancellor, of Ipswich, is the architect, Mr. Joseph Grimes, of Colchester, being the contractor.

BUILDINGS.

BRIGHTON.—Markwell's Royal Hotel, Brighton, was inaugurated on Saturday week. The building stands boldly out from the King's-road, and has been erected on the site of the old battery, or what was more recently Mahomed's Baths. The hotel covers an area of only about 1,500 square feet, but as it has three frontages, great opportunity was given for subdivision of rooms. The building is five stories high, and has a Mansard roof, pierced by dormer windows. Mr. Whichcord is the architect, Mr. James Winterbourn being the builder.

WESTHOUGHTON. — The *Bolton Chronicle* remarks on the rapid extension of building in Westhoughton of late years. That extension still continues, and at the present time a large number of dwelling-houses are in course of erection in Chapel-lane and other thoroughfares, to say nothing of the new parish church, Wesleyan chapel, Congregational schools, and the Town's Offices. It seems a pity, however (says our contemporary) that there is no authority in this township whose business it is to see that new streets are properly laid out.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

RECEIVED.—J. P. S., G. H. G., J. C. J., T. C. E., H. W., G. O., W. H. R., J. D. M., J. B., T. T. and Co., W. S., F. E. T., T. P. L., J. A., J. S., L. and H., J. H., J. F., J. C., W. S. B.

S. R.—Your sketch of doorway of K. Church is not good enough for reproduction by the photo-litho process. We have received several others recently of similar quality.

EDWARD HODGSON.—With sketch of St. Peter's Church.

THEODORE.—Tyler, 7, Wood-street, Westminster.

J. B. MARSH.—With sketch of west door of St. Peter's, Wolverhampton.

ERRATUM.—In our notice last week of the new Baptist chapel, James's Grove, Peckham, Mr. J. Mitchell, of Bedford-row, should have been named as the architect, and Mr. J. Thompson, of Camberwell-green, as the builder.

Correspondence.

BUILDERS' CONTRACTS.

(*To the Editor of* THE BUILDING NEWS)

SIR,—Within the present month an ambitious contemporary, aiming to represent the higher and artistic branches of our profession, published—with the prominence of a leader—an article of importance to the profession generally, but especially to those gentlemen who may chance not to be able to write after their names the mystic initials "F.R.I.B.A." It was based on the consideration of a complaint by some of the most eminent London builders that the usual terms of a building contract gave to the architect certain powers, unobjectionable if placed in the hands of practitioners of acknowledged reputation, but not so as regards those of inferior position.

The part of the general conditions particularly brought under notice was an arbitration clause, and if this could be conceded the builders seemed disposed to rest and be thankful. The matter was considered by the Institute, and that illustrious body having "loyally determined" to concede the principle in a certain form, I would invite your attention to the nature of such concession.

The representatives of the Institute propose that the valuation of extra works and the liability for delay in the performance of the contract should be left for a referee to decide upon, but "the control of the building, the interpretation of the drawings and specifications, and the approval of materials and workmanship are considered to be of the essence of the architect's functions, which he cannot be invited to yield in any way to any superior jurisdiction but that of the courts of law;" and the "authorities of the profession" also propose to "confine the selection of the arbitrator to the body of Fellows of the Institute—these being practising architects of not less than seven years' standing."

Now, the "authorities of the profession" here alluded to are probably all Fellows, and it has no doubt escaped them that the adoption of this suggestion would necessarily hand over entirely to themselves all the judicial work hitherto also enjoyed by gentlemen who are perhaps merely Associates, or, may be, not connected with the Institute at all. It is well known that among the most important referees of the day are gentlemen who are not Fellows of the Institute. And why is this? Because the fact of a man being a Fellow has, in most cases, necessarily prevented him from taking part in the earlier years of his practice in those technical and practical matters upon which, in the majority of cases, he would be required to decide. And if the Fellows of the Institute are determined to enlarge the sphere of their action so as to take in that now to a great extent performed by surveyors, very many will soon discover that it will be necessary to acquaint themselves with matters which at the present time they are proud to look upon with disdain and contempt.

There would seem to have grown up recently a strong feeling on the part of the architect pure and simple of seven years' standing that by the very fact of his utter ignorance of practical details and judicial functions, from which it is his pride and ambition to hold himself aloof, he becomes a superior and inspired creature, who can not only afford to look with scorn on the laborious existence of his more practical and well-informed brethren, but now proposes to add to the extensive range of his artistic acquirements the whole business of deciding upon building disputes, which in almost every instance turn on a right appreciation of technical points with the true nature of which it is ever his boast that he is unacquainted.

The mere suggestion by the Council of the Institute that the duties of arbitrator should thus be confided to persons qualified by seven years' practice as architects, and payment of four guineas a-year, deserves serious consideration by the builders to whom the proposal will be made, and of all surveyors and architects who may not enjoy the qualification just mentioned; and I hope that the subject, which is of vital importance to the interests of the profession, will receive the fullest discussion in the pages of your journal.—I am, Sir, &c.,

A Surveyor.

NEWARK CHURCH COMPETITION.—EXTRAORDINARY ARBITRATION BY MR. SCOTT.

Sir,—It is very common for architects to find fault with competition committees, but the eminent architects who are sometimes appointed to arbitrate frequently act with as little logic, and consequently with as little fairness, as their employers. The Newark Church competition is a case in point. Mr. Gilbert Scott was appointed the arbitrator. Eight architects, residing in Nottinghamshire and Lincolnshire, were invited to compete. Two designs, respectively from Mr. Knight and Mr. Evans, of Nottingham, were pronounced by Mr. Scott to be equal in merit and superior to those of the other competitors. The design from Mr. Evans was drawn in the somewhat hackneyed style so much liked by Mr. Scott. Of course as Mr. Scott could only judge by his own lights, no blame can be attached if he made a mistake. But why, after distinctly stating that the designs are equal in merit, does he in his report proceed to criticise one design and not the other? If one design possesses faults so must the other; otherwise how can they be equal in merit? The fault which he finds in Mr. Knight's design is that his chancel is too small, so that he throws in a criticism against Mr. Knight's design as a sort of spoke in the wheel for the other design; and this (as previously mentioned) after clearly stating that the two designs are equal. But now for the justice of his criticism. The cost of the church is to be £3,000, and it is to accommodate 600 persons. Mr. Knight's chancel is shown to be 32ft. long by 19ft. broad, inside measure. I think I may safely leave it to the practical common sense of your readers whether—considering the small amount (£3,000) provided, and the large comparative accommodation—this chancel would not be ample for the purpose. That there are faults in Mr. Evans's design is manitest enough, but I forbear to criticise them, although I am sure all will understand how extremely unfair and invidious it was, after yielding an apparently unwilling admission that the designs were equal, to proceed to criticise one and not the other; more especially as Mr. Scott's criticism would not fail to be pronounced by all practical men as being incorrect under the circumstances.

After so little consideration has been shown by the arbitrator, it is not a matter for surprise that the committee should show still less In the first place, they have opened the letters containing the mottoes before the competition was decided; and, as an illustration of the great unfairness of this measure, it is only necessary to mention that whereas one competitor was well known to the committe the other had not the least acquaintance with a single member. They disregarded the clause in the conditions which states that a London architect should decide the competition (which had been left an open question by Mr. Scott); and they have acted upon their arbitrator's remark about the size of Mr. Knight's chancel, which every practical man must know is, under all the circumstances of cost and accommodation, amply large enough, and they have accepted Mr. Evans's design.—I am, Sir, &c.,

A Sufferer.

BUILDERS DRAWING PLANS.

Sir,—There is, perhaps, too much of that cry for "protection" (so natural to every one of every occupation) in the several letters that have been published on this subject to make their assertions of much value. The protection for architects, so much desired by some, would appear, from many remarks of those who advocate the subject, to be a monopoly of doing certain things that others could do as well or better—the privilege of a trade, instead of the noble patriotism that fears lest the art should be mutilated by unworthy hands.

There is no real or natural distinction between the general qualifications of a builder and an architect. Necessity certainly imposes a distinction, which, like many other subdivisions of employment, has both advantages and disadvantages; and the necessity is this, that the age requires speed, and, as far as possible, separates every art and branch of art and trade for considerations of economy and accuracy of execution. A former age could allow one man to design, superintend, and complete many a wondrous edifice; his minute and carefully studied invention, whether depicted on paper or not, would be developed by his own care as the works proceeded in a way that no specification could teach to others, while his intimate acquaintance with the construction of every part of that building on which his almost sole attention was placed would be such that few office-trained men can get, indentures notwithstanding.

As one who has seen much of building, from turning the grindstone up to the position of manager and principal, with several years' engagements as draughtsman, I am able to write without that angry class-feeling that sees the hobgoblins of the "scamping builder" and the "tyrannical architect" in every brick and stone. When too much is said of the latter I think of the dodges adopted to get through many jobs; the foolishness of those who take work at ridiculously low prices when they know it must be done well, and if so they must lose; of the unsatisfied client, who always thought the price was exorbitant. And when the former is rated (as by the way he too often is just now), I cannot but remember that keen competition and hard necessity induce many to cut so close that loss is certain; that the risk, casualty, and carelessness of workmen is all on their shoulders; that often both client and architect are exacting; that details are delayed and money scarce; or worst of all, perhaps, that a fee is expected or condemnation sure.

The talented, the proficient, and the employed of both sides need no law to protect them. The ignorant of both sides, who find they are not appreciated, would no doubt profit by any law that compelled people to buy at their shops; but no law would make me think that I could not draw a plan as well as most of the latter class, although neither time nor inclination would permit me to attempt such plans as a real architect alone has the qualification for.

In conclusion, I should be sorry to see any law of monopoly passed. The necessity for one such law would be argued as a reason for others, till in "Unions" all was lost but the selfish principle of exclusion—that has been the ruin of nations—and intolerance, the destroyer of energy and skill. —I am, Sir, &c.,

Triangle.

DECORATION OF REFRESHMENT ROOMS, SOUTH KENSINGTON.

Sir,—Verily there is no accounting for taste! After reading the admiring account in last week's Building News of the decorations to the refreshment room at South Kensington Museum, I could only look and wonder. I am not, I must say, an admirer of the works of the firm named. I cannot consent to ignore altogether the teaching of the past, and suppose that those nations which attained such pre-eminence in the arts—the Greeks and Romans—with all others, should be in the wrong. Yet it must be so if the practice of the firm be right, for the latter is opposed to all else!

The effort and aim in ancient decoration was to enliven and cheer—the effect of the firm's work is to sadden and depress. Assuredly, I may say, "melancholy has marked them for her own." I assert that the style of the room described is utterly inappropriate for the purposes of the place. In a *salle a manger* the character of the decoration should be bright and cheerful, whereas in this under consideration the predominant, all-prevailing hue is a dirty green, bearing associations of corruption and the charnel house; appropriate, perhaps, if we eat "meats for the dead," but in no way calculated to raise the spirits of the living. This murky mortuary compound, honoured as geeen, is made, we are told, of "black and yellow." This is not correct, as those pigments would not produce green; but it is sufficiently descriptive to give those who have not seen the place an idea of its dismal lugubrious effect. To my mind it is so positively forbidding that I expect it will not be without a prejudicial effect on the purveyor's interests.

It is satisfactory to see in the work of the firm evidences of thought and design; but it is a pity these artists will so obstinately choose what is strange, uncouth, and repellant in preference to taking their cue from ancient art, and studying to educe what would be generally pleasing. If, in the room under notice, a cheerful green had been used for the walls, and the woodwork treated with a sober shade of red, there would have been contrast, harmony, and pleasing variety—"variety is charming." As it is, the room but illustrates the old adage, that "too much of one thing is good for nothing.—I am, Sir, &c,

M.

ERRATUM.

Sir,—In the notice of "Gugliemo da Castelbarco" in your last number (p. 88, col. 2, line 52) "Conte" was printed for "Corte." The name of the historian I have mentioned should have been "Girolamo dalla Corte." I am sometimes guilty, it would seem, of making r's like n's, so that the printer becomes puzzled in words not familiar to him.—I am, Sir, &c.,

H. C. Barlow.

Intercommunication.

QUESTIONS.

[1905.]—CALCULATING EARTHWORK.—Would any of your contributors tell me what is the proper way of calculating the contents (cubic) of a cutting or embankment? Is the method by "mean heights" or "mean areas?" for I find they do not agree by a long way. As an example, I have a cutting 700 yards in length. The base is 30ft., the side slopes 1½ft. to 1ft., and the heights at each end 11ft. and 35ft. respectively. What is the number of cubic yards in it? I should be greatly obliged for this information, as I cannot get the same result by any two kinds of tables. or independent methods of working.—Young Engineer.

[1906.]—WEIGHT OF RAILS.—Is there any rule for proportioning the weight of a rail to that of the load it has to carry? We are continually witnessing heavier and heavier rails being laid down on our railways, and yet the traffic is pretty much the same. Is it a question of strength or of mere durability?—S. S. L.

[1907.]—SHRINKAGE IN CASTINGS.—At the recent competitive examination for appointments in the Public Works Department of India, one of the questions given was—"In making patterns for castings, how much shrinkage should be allowed for the contraction of the metal in cooling?" I should be glad to know what the allowance is, and still more, how it is allowed for, as that appears to me to be the most difficult matter.—J. M. D.

[1903.]—GEOMETRICAL PROBLEM.—As problems of this nature frequently appear in your "Intercommunication" column, and are well calculated to test the ability and zeal of your correspondents, allow me to propound the following:—If the vertical angle of a triangle be 120°, and the difference of the sides equal to 3·5 of the base, find the remaining angles?—Q. E. F.

[1909.]—HYDROSTATICS —A full solution of the following problem will oblige :—A solid cone floats with its axis vertical in a given liquid; compare the portions of the axis immersed. 1st, when the vertex is upwards; 2nd, when it is downwards.—R. L. B.

[1910.]—LIABILITY.—Will any of your readers oblige me with their opinion on the following statement of facts : —A asks B, who is an architect, to make plans and get quantities for a stable and cottage, and mentions £500 as the amount he is willing to go to. B accordingly gets out the plans and employs C, who is a quantity-taker, to make out the quantities. C is altogether unknown to A. The lowest tender for works is £1,100. B therefore modifies his plans and a tender is made of £850. A does not wish to pay more than £500, as originally contemplated, so the stables are not built. B and C both send in bills to A. Query. is A liable to either B or C, or both, and how much?—A. B. C.

REPLIES.

[1902]—SURVEYOR OF TAXES —In reply to "Assistant," I believe that the qualifications necessary to gain a berth in this capacity are as follows :—1. Writing from dictation; 2, arithmetic (including vulgar and decimal fractions); 3, English composition; 4, geography; 5, history of the British empire. I do not know who are the examining body.—Enrussed.

[1902.]—SURVEYOR OF TAXES.—As to the first part of your correspondent's question, there are no particular qualifications necessary, beyond a fair average education and a limit of age. The candidates have to appear before the Civil Service Examiners. "Assistant" should get a little book called "A Guide to the Civil Service." He will find it invaluable, as it contains many of the actual papers given at former examinations.—Clerk.

[1901.]- TESTING PORTLAND CEMENT.—There is no instrument for testing cement to be compared to that used by Mr. Grant on the Main Drainage Works. In fact, no one who has anything to do with testing cement would think of using any other. It was made by Adie, of London. —Test.

◆

STATUES, MEMORIALS, ETC.

The Brewster Memorial Statue.—The memorial to Sir David Brewster was inaugurated on Monday at Edinburgh University. The statue, which cost £600, and is by Mr. Brodie, R.S.A., is placed on a pedestal under the central arch on the west side of the quadrangle of the University. It is 7½ft. in height, weighs 3 tons, and is formed of Sicilian marble, the block selected being remarkably free from flaw or discoloration.

◆

WATER SUPPLY AND SANITARY MATTERS.

Aylesbury.—Mr. J. Bailey Denton has been appointed consulting engineer to the Aylesbury Local Board of Health.

Bedford.—The Bedford Corporation has hired about 150 acres of land for the purpose of turning to profitable account the sewage, which has hitherto been a great nuisance, and how well the scheme has succeeded may be judged from the luxuriant crops of grass and cabbages and various other vegetables now growing. The sewage is brought in large mains from the town to a point slightly elevated above the land to be irrigated, where it is collected in large reservoirs, and by means of a system of gratings is screened of all materials that would cause the sewage to block in the smaller carriers. From these reservoirs it is pumped into a tank raised sufficiently high to force the liquid in any direction and in any volume that may be required. Leads run at the head of the lands, and from these the sewage is conducted in carriers placed at given distances apart and at right angles to the leads. There is a contrivance for regulating the flow or cutting it off altogether by means of traps. The land is so laid that it is all served pretty well alike.

Bideford.—A new reservoir for the waterworks at Bideford is now in course of construction under the auspices of the Bideford Local Board. Mr. Baldwin Latham last week inspected the puddle trench.

Birmingham.—The Birmingham Town Council have under consideration a proposal to purchase 3,000 acres of land as a sewage farm. The cost of the scheme is estimated at from £250,000 to £300,000.

Chester-le-Street.—During the past few weeks great complaints have been made of the offensive state of the sewers in this town, and the stench from the grates has been unbearable. There has been such a small rainfall that the sewers have not been washed out for several weeks. With an abundance of river water at hand the sewers might readily be flushed once a week at a very small cost at least during the dry weather.

Croydon.—The prospectus has been issued of the Croydon Irrigation and Farming Company (Limited), with a proposed capital of £10,000, in 1,000 shares of £10 each. The company has been formed with a view to develope the practical application of sewage to agricultural purposes. The Croydon Local Board of Health has agreed to grant the company a lease of about 500 acres of land in the parishes of Croyden and Beddington; and to deliver to the company the whole of the liquid and solid sewage and refuse of the town of Croydon. The Board has also agreed to let to the company the filter works and land at Croydon and Beddington, and to deliver on to the works at Croydon the whole of the refuse collected in the district. The extraction of the solid matter from the sewage will be effected by the newly-patented process of Mr. Baldwin Latham, C.E., the engineer to the Local Board, and it is intended to manipulate and manufacture the solid manure extracted from the sewage by this machinery, and make it into a portable manure.

Dronfield.—Mr. Coke, surveyor, of Chesterfield, has offered to supply Dronfield and Unstone, with water. It appears that Mr. Coke is now making a survey in the valley between Millthorpe and Crow Hall, with the view of making a large reservoir for the supply of Staveley, The place chosen for the supply of Staveley is said to be the only source from which the inhabitants of Dronfield can get a sufficient supply of water for domestic, sanitary, and manufacturing purposes.

Duties of Sanitary Committees.—We read in a Cambridge paper that the sanitary committee of St. Ives (Hunts), have been making a tour round the town, "and we are sure," says our Cambridge contemporary, "if they carry out their duties many grievous nuisances now existing will be removed." We are also sure that it would be to the advantage of other towns were their sanitary committees (if only occasionally) to emulate the example set by that of St. Ives.

Esher.—The directors of the Lambeth Waterworks Company have, upon the requisition of the inhabitants, agreed to furnish a water supply to this village from their mains at Seething Wells. This has long been needed.

Trowbridge.—The petition presented in Chancery for winding up the Trowbridge Water Company was accepted on the 15th ult., without opposition. Want of capital was the cause of failure. The inhabitants are now without any direct source of supply of water.

Utilization of Sewage at Ely.—The Ely Local Board of Health lately appointed a committee to visit the Croydon, Barking, and Romford sewage irrigation farms, and to report on the feasibility of carrying out this system of dealing with town sewage at Ely. The committee has reported in favour of irrigation, and it is to be tried experimentally.

Waltham Abbey.—The Waltham Abbey Local Board of Health has adopted the plan recommended by Mr. Sendey in respect to the new drainage and the collecting of the sewage into two tanks in the town mead.

◆

Our Office Table.

Cheap Railways.—We have on previous occasions referred to the cheap railways and economical rolling stock which, by Mr. Fairlie's method, could be rendered available. A trial was made the other day on the Festiniog Railway, in Wales, in presence of engineers from many parts of the world, which seems to settle the question. The gauge of the line is 1ft. 11½in. only; the locomotive, running on a "double bogie," weighs 19½ tons, and it drew a train weighing 114 tons from Portmadoc to Festiniog (fourteen miles), all the way uphill. There were times when the train was running on five curves at once, and without difficulty, owing to the bogies, which yield easily to every bend. Here, then, is an indication of the kind of railway suited to hilly districts which have passengers or merchandise of any kind to send down to the plains. There is room for such in England, while in Canada and India there are wide regions that might be benefited by the light narrow railways, and where the ordinary gauge would be too costly.

Street Cleansing and Watering.—Mr. Thos. Page, the well-known civil engineer, proposes some measures for the much-needed reform of the London streets. He condemns the present system of pouring water almost indiscriminately over streets from which the dirt and manure have not first been removed. This objectionable system (for ignorance has its systems) is most expensive, and continually obstructs the passage of vehicles. Another nuisance, equally to be condemned as injurious to the general health and traffic, is the dust-cart system. These sources of disease are in use at all hours of the day. He suggests that the streets should be swept by boys, who could also water the streets by means of hose-pipes screwed on to the mains. When out of 2,800,000 inhabitants in 1861—say 3,500,000 at the present time—there are 127,600 persons called paupers, who have to be supported by their fellow-subjects, the labour of such persons ought to be made available in placing the metropolis on a better footing in its sanitary arrangements.

Destruction of Grecian Antiquities.—Those who are interested in Grecian antiquities will read the following extract from a recent letter with regret :—"The walls of the Acropolis of Assos appeared to have suffered most, being almost levelled to the ground. The gateway in the lower part of the city is still intact. After the destruction of many structures and shipment of part of the material for the construction of the new forts at the Dardanelles and for other purposes, the cost of transport was found too expensive, and the work of destruction was suspended, to be renewed, no doubt, when a cheaper mode of conveyance may be organised, or an urgent demand for building material arises. The remains at Alexandria Troas are more likely to suffer than those at Assos, being in closer proximity to Constantinople and the Dardanelles, and continued raids are made on these ruins. The gymnasium of Alexandria Troas (erroneously called Priam's Palace), notwithstanding its gradual rapid disappearance, is still a fine and imposing building," The *Pall-Mall Gazette* asks "Ought not our ambassador to interest himself in the preservation of the remaining monuments of a civilization which has exercised so great an influence on mankind?"

The Brighton Aquarium.—The works in connection with the aquarium about to be erected on the beach have been commenced. The foundations, of the sea wall on the south side have been dug and the place has been barricaded in. The works are to be pushed on vigorously, so that there is every probability of the aquarium being opened to the public by the 31st of December next.

Mortuaries Wanted.—The almost tropical heat which has prevailed of late is enforcing upon the attention of vestrymen and other officials the question of mortuary accommodation in large towns. It is specially horrible to contemplate at this time of the year the keeping of a corpse for three or more days in the same room in which very often one or more adults and four, five, or six children have to sleep. The question has been mooted at the Lambeth vestry, but with no satisfactory result. Mortuaries must, sooner or later, be provided. Why should they not be erected forthwith?

The Corporation of London and its Surplus Land.—There was a discussion on the finances of the Corporation of London at a recent meeting of the Court of Common Council. Attention was drawn to the fact that while the City authorities possessed a great quantity of unproductive surplus land, very large bonded obligations had been contracted in carrying out the great public works which had been undertaken. The estimated value of the surplus land is £1,500,000, the interest on which, at the rate at which the Corporation had been borrowing money, represented an annual income of £63,750.

Bells for Temporary and other Churches. —Mr. Thomas Walker, bell-ringer, of Hull, writes as follows :—"I have long been of opinion that great improvements might be made on the principle by which small bells are fixed for temporary and other churches. As at present, the bells are made to swing, and being small and light, the effect whilst tolling is much like the quick ringing of dock bells, or bells used at 'feasts and fairs.' Having devoted considerable time to the study of bells and bell-ringing, I would suggest that, in all cases where small bells are fixed for temporary and other churches, the bell should be made a fixture, and a small cord attached to the clapper and passed through a sheave or pulley fixed in a horizontal position. I think that this would be at least an improvement on the ordinary plan; more tone would be produced, and the bell could be tolled slowly, and by that means it would appear more like the toll of the 'church-going bell.'"

Dover Harbour.—The *Dover Express* reports that the Harbour Board has instructed an eminent engineer to prepare plans of extensive improvements in Dover Harbour, which they have determined to carry out as speedily as possible, and which will give as much accommodation for vessels as that which is to be provided on the French coast, in order to carry out Mr. Fowler's scheme of improved international communication.

Projected Boulevard for Hull.—Mr. J. F. Sharpe, surveyor to the Hull Local Board of Health, has proposed that a boulevard shall be laid out, commencing from the Humber bank, at a little distance eastward of the point where the Albert Dock Promenade terminates, and extending, for the present, to the Anlaby-road. At a later period it will, in all probability, be continued to the Park, and possibly, at a still subsequent period, to the river's bank on the eastern side of the town. The proposal has been rendered financially practicable by the public-spirited offers of the landowners of the neighbourhood. Mr. Constable, one of the latter, has offered, instead of constructing a street through his property 40ft. wide, as he had originally intended, to give additional land which will make it 80ft. wide; to give other land which will make a road 20ft. wide (to be planted with trees) between the southern end of the boulevard and the Albert Dock Promenade, making the boulevard altogether three-quarters of a mile in length; to give £2,000 towards the expense of making the road; to give additional ground to form circuses where the road is intersected; to give £250 towards the cost of a drinking fountain, which will form one of the features of the boulevard; and to give sites for a new church and parsonage. The Local Board has resolved to carry out the work, the cost of which will be £7,000.

LATHE FOR TURNING BANISTER RAILS, &c.—Mr. G. Sconcia, of New Coventry-street, Leicester-square, has just brought to this country a new self-feeding lathe for turning banister or wainscot rails, whip handles, chair-rounds, or any article of a round shape on which undulations of an ornamental character are required. The blanks, square in section, are put in at one end of the apparatus, and they pass out at the other end in a finished state, taking as they go the shape of a pattern-plate fixed to a slowly-revolving wheel at the side. The machine works very fast, the cutters running at an amazing velocity to act upon the blanks. It is said that there is no limit to the number of articles this lathe can turn out. Anything of a plain, tapered or irregular shape can be made by it. All that is necessary is to adjust a pattern of the work wanted, which guides the chisels; then put in the length or square of timber at one end and it will speedily appear at the other end smoothly finished. The finished work is said to be turned out by this lathe about ten times faster than can be done by the ordinary lathe. Mr. Sconcia proposes to start a limited liability company to work the invention, so that decorative carpenters, upholsterers, and others can be supplied with any quantity of rails, &c., in a short time, and at far less cost than they can have them turned at home for.

THE DINGWALL AND SKYE RAILWAY.—The Government inspection of this new line commenced on Friday last. Captain Tyler, R.E., was accompanied in his survey by Mr. Mackintosh, of Raigmore, M.P., and Mr. Dallas, of Dunain House, directors; Mr. And. Dougal, general manager; and Mr. Murdoch Paterson, the engineer. Up to Saturday night the Dingwall contract (Messrs. Grainger's), extending from Dingwall to Achanalt Inn, a distance of 21½ miles, had been gone over, the bridge and culverts being tested by the weight of three engines; and the whole construction was considered satisfactory. It was intended to open the line for goods traffic on Thursday, and for passengers on Monday last, the formal opening taking place on the 10th.

DEATH OF MR. J. B. PYNE.—Mr. J. B. Pyne, the artist, who was for many years Vice President of the Society of British artists, died at his residence in the Camden-road on the 29th ult., in the seventieth year of his age. Mr. Pyne was a native of Bristol, and when a lad was articled to an attorney. The law was not, however, to his taste, and he soon abandoned it to follow the more congenial pursuits with which his name has become associated. His views of the English lakes, and his Italian scenes, are the works by which he is best known. Mr. Pyne had been ill for many months, and for some time but little hope had been entertained of his recovery.

THE NEW COURTS OF JUSTICE.—The expenditure upon the new Courts of Justice up to the 31st of March, 1870, slightly exceeded £900,000, from which must be deducted about £10,000 for the proceeds of the sale of old materials. This expenditure was for the purchase of the site, with incidental and preliminary expenses. At present the statutory limit of expenditure for the erection of the new courts and offices stands at £750,000.

THE ROYAL ACADEMY AND THE WORKING CLASSES.—A short time back Mr. George Potter addressed a letter to several of the newspapers, suggesting that on a certain evening the exhibition of the Royal Academy should be open for the gratuitous admission of the working classes. Mr. Edmund Yates, writing on the subject, says:—"Mr. Potter may know a great deal about trades unions and working-men, but he evidently knows nothing about the Royal Academicians. He imagines their mission is to diffuse a knowledge and love of art; they know that it is to accumulate shillings. Not 'a thing of beauty,' but eightpence profit on a catalogue is 'a joy for ever' to the large-souled old gentlemen who have the guidance of affairs at Burlington House."

WIRE TRAMWAYS FOR STONE QUARRIES.—Lord Kinnaird is at present putting up Hodgson's wire tramway for the transit of blocks of stone from a quarry situate in Hilltown, a little north-east of Rossie Priory. The Duke of Sutherland also intends to construct a ten miles' length, to transport limestone from Loch Shin to Golspie Harbour.

THE GROSVENOR GALLERY.—The Marquis of Westminster has allowed the authorities of the South Kensington Museum to select for exhibition any pictures from the Grosvenor Gallery for which space can be found. Many of the finest works have been accordingly removed and will be exhibited in a few days.

THE NEW BREAKWATER AT WICK.—The reconstruction of the portion of the new breakwater at Wick which was thrown down by the storm of February last is now being vigorously carrried forward, and already a large portion of the work has been completed. The breakwater will, in future, be built solid throughout, with large stones placed on edge, and the whole will be set in Portland cement to as low a level as can be attained. Already the greater portion of what was proposed has been completed.

THE SEVERN LOCKS AND WEIRS.—Sir Edmund Lechmere and other members of the Severn Committee have just made their first official survey of the new locks and weirs now being constructed on the Severn, at Gloucester, under the superintendence of Mr. A. Williams, from the designs of his father, Mr. E. L. Williams. The works comprise a lock and weir at the upper parting, in the Maisemore Channel, and a second lock and weir much more extensive in the eastern channel. The cost, £20,000, has been guaranteed in equal sums by the Gloucester and Berkeley and the Staffordshire and Worcestershire Canal Companies. The works have been in progress for some months, and it is expected the chief weir and lock will be so far completed that boats will be enabled to pass next November. The guaranteed effect will be an uniform depth of 7ft. of water in the eastern channel, which is of chief use to Gloucester commerce, but which of late years had been gradually silting up. Already an increased depth of 2ft. has been secured.

Chips.

THE foundation stone of a new Primitive Methodist chapel at Frodsham Bridge, Cheshire, was laid the other day.

A new chapel for the United Methodist Free Church has just been completed at Wisbech, Mr. Kerridge being the architect, and Mr. Beeton, of Hunstanton, the builder.

The foundation stone of a new manse for the pastor of the Unitarian congregation at Moneyrea, Ireland, was recently laid. The building will cost £400.

The men in the employment of Mr. J. G. Naylar, contractor, of Rochester, held their annual beanfeast on Saturday week. About one hundrod sat down to dinner.

It is proposed to form a limited liability company at Guildford for the establishment of public baths.

The Hailsham Cattle Market Company have resolved to apply to Parliament for powers to erect a new cattle market without the limits of the town.

Wirksworth Church, Derbyshire, is being restored by Mr. G. W. Booth, builder, Gosport. The cost will be £7,600.

The foundation stone of a new chapel and school for the United Methodist Free Church was laid last week at Gauber. Messrs. Taylor and Son, of Barnsley, are the contractors for the mason work.

Owing to the disturbed state of the Continent, it has been decided to postpone the proposed exhibition of the works of Holbein at Dresden until next year.

The death at the advanced age of eighty-eight of Mr. Benjamin Thorpe, the archæologist and antiquary, is announced.

Mr. Manfred Holyoake, who retires from the post of curator to the painting school at the Royal Academy, is to have a testimonial, which will probably take the form of a portfolio of original sketches by the academy students.

The foundation stone of a new Primitive Methodist chapel was laid at Kilnhurst on Monday week. Messrs Wilkinson Brothers of Swinton Bridge, and Mr. Joseph Morley, of Grasbrough, the plans being by Mr. Kerridge, of Wisbech.

The new church of S. Stephen, Byron-street, Liverpool, is to be consecrated to-day (Friday).

At the recent meeting of the Wesleyan Conference at Burslem, it was stated to be the intention of the Wesleyan body to erect ten new chapels in London during the next year, at a cost of about £20,000.

Lord George Hamilton, M.P., will lay the foundation stone of Christ Church, Victoria Park-road, to-morrow, Saturday.

St. Mark's Church, Sandringham-road, West Hackney, will be consecrated to-morrow (Saturday) by the Bishop of London.

The memorial stone of a new school, in connection with Grove-street chapel, South Hackney, was laid on Wednesday week.

An additional aisle is being erected at the church of St. Mary Magdalene, Paddington.

A new burial ground for Southend has just been consecrated by the Bishop of Rochester.

The new church of St. Andrew, Plaistow, was consecrated on Friday last.

The foundation stone of a new school for the Primitive Methodists of Caistor was laid last week.

A large billiard room has just been added to the Royal and Fortescue Hotel, Barnstaple, from a design by Messrs. Gould and Sons, architects, of that town.

The Balsham Union Chapel, Balsham, Cambridgeshire, was re-opened on Tuesday week, after repair and enlargement under the direction of Mr. Clay, architect, Bentinck-street, Cambridge.

Miss Burdett Coutts laid the foundation stone of a new national school for the parish of St. Ann, Highgate-rise, on Wednesday week.

A meeting of the creditors of Mr. Magnus, of the Pimlico slate works, was held on Wednesday week at Dyers' Hall, Dowgate-hill. Liabilities £35,411., assets £47,641. It was resolved that Mr. Magnus should carry on his business as heretofore, and that time should be given to realise the property without sacrifice, and the creditors be paid in full. Mr. H. Farren, secretary to the Valencia Slate Slab Company (Limited), was unanimously elected trustee.

The curatorship of the school of painting in connection with the Royal Academy of Arts has been declared vacant. It is intimated that artists desiring the appointment may make application until the 13th of August.

On Saturday last the Bishop of Manchester consecrated the new church of S. Paul, Low Moor, Clitheroe. The edifice, which is in the Gothic style has cost £6,000.

The foundation-stone of a new church at Lilley, Herts, was laid on Wednesday last, by Mrs, Lilley, wife of the lord of the manor.

At a meeting of the Southmolton Local Board last week the sanction of the Secretary of State was received to the borrowing of £3,000 by the Board on the security of the district rates, the money to be employed in various works.

The large silk mill for Mr. Hilton, at Leigh, Lancashire, is now nearly finished The mill is from a design by Mr. Hartley Hacking, architect, Manchester. Messrs. Wade and Co., of Miles Platting and Manchester, are the builders.

Haslemere parish church, Surrey, is now in course of restoration. The work is entrusted to Mr. Harris.

A new Wesleyan chapel and day schools are now in course of erection at Doncaster. Mr. H. Arnold is the builder.

A building has been commenced at Barnard Castle for a museum of art and science. When finished, it and its contents are to be handed over to the town authorities, Mr. and Mrs. Bowes being the donors.

A new infant school, in connection with S. George's Church, Tyldesley, is about to be erected from plans by Mr. C. S. Whitehead, C.E., of Atherton. The style adopted is Elizabethan.

Timber Trade Review.

We give below a list comparing the prices of timber, deals, &c., before the declaration of war and those obtained since. This may be some guide to builders, as the prices are not those which are or have been quoted by merchants, but, as far as our knowledge goes, have been actually paid. Only in a few instances is the difference very serious, but whether great or small it is advisable to know it. Less or more may have been paid by individuals, but the list represents a fair average on both sides:—

		Before.			After.		
		£	s.	d.	£	s.	d.
Christiana 1st yellow	3 × 9	11	5	0	11	7	6
Do. 1st white	3 × 9	10	5	0	10	15	0
Do. 3rd yellow	2½ × 6½	6	15	0	7	0	0
Drontheim 1st white	2½ × 6½	5	17	6	6	12	6
Do. 2nd white	do.	5	10	0	5	17	6
Do. 3rd white	do.	5	7	6	5	7	

Dram 2nd yellow	do.	7	0	0	7	7	6
Do. 3rd do.	do.	6	12	6	6	12	6
Hussum mixed yellow	4 × 9	9	10	0	10	5	0
Do. do.	4 × 7	9	0	0	9	0	0
Dantzig lathwood		4	0	0	5	15	0
Escoumams spruce		7	15	0	7	17	6
Gefle 3rd yellow	4 × 12	9	10	0	10	5	0
Do.	4 × 9	9	10	0	10	5	0
Do.	3 × 11	9	0	0	10	5	0
Do.	3 × 9	9	15	0	10	15	0
Do.	4 × 11	9	5	0	10	0	0
Holmsma 3rd yellow	3 × 2	9	5	0	9	10	0
Memel 2nd middling timber		3	0	0	3	5	0
Ljusne yellow	3 × 11	8	10	0	9	0	0
Petersburg lathwood		6	15	0	7	0	0
Do. Gromffs yellow	3 × 9	13	0	0	13	5	0
Quebec 1st bright	12ft. 3 × 11	18	15	0	18	15	0
Do. 1st. dry	do.	16	10	0	17	5	0
Do. 1st floated	do.	16	0	0	17	0	0
Do. 2nd bright	do.	13	5	0	13	10	0
Do. 2nd floated	do.	12	0	0	12	0	0
Do. 2nd dry	do.	12	10	0	12	10	0
Do. Waney yellow pine		4	0	0	4	0	0
Do. red pine		3	15	0	3	17	6
Swartwick 3rd yellow	4 × 9	9	10	0	9	10	0
Do.	3 × 8	8	0	0	8	5	0
Schien mixed yell5w	2½ × 7	7	0	0	7	15	0
St. John's 1st spruce	3 × 11	8	17	6	8	17	6
Do. 2nd do.	3 × 11	8	5	0	8	5	0
Do. 3rd do.	3 × 11	7	15	0	7	15	0
Skelleftea yellow balks		1	12	0	1	15	0
Uddewalla mixed yellow	2½ × 7	8	15	0	9	0	0
Do. 3rd do.	do.	1	9	0	8	10	0

[Prepared Flooring.]		s.	d.	s.	d.
Frederickstadt 1st yellow	1¼	13	6	13	6
Do. 1st do.	1	10	9	11	3
Do.	¾	7	0	7	3
Do.	⅞	8	3	8	3
Do. 1st white	⅞	7	9	8	6
Do.	¾	6	3	7	6
Christiana 1st yellow	⅞	8	0	8	6
Fredrickshald 1st white	⅞	7	6	7	6

The prices of the above deals and battens are at per Petersburg standard in every case The timber at per load, load, the lathwood at per cubic fathom, and the boards at per customary square.

The suspension has been announced of Messrs. John Rutty & Co., timber merchants, of Paddington, with liabilities reported to amount to about £80,000. Their books have been placed in the hands of Messrs. Theodore Jones & Co., and a meeting of creditors will be called at an early date. It is feared the liquidation will be unfavourable.

LATEST PRICES OF MATERIALS USED IN CONSTRUCTION.

TIMBER.

Teak load	£12	0	13	0
Quebec, red pine	3	15	4	15
,, yellow pine	4	0	4	15
St. John N.B. yellow	0	0	0	0
Quebec Oak, white	5	15	6	5
,, birch	3	15	5	0
,, elm	4	5	5	5
Dantzic oak	4	5	6	0
,, fir	2	5	4	5
Memel fir	2	10	3	15
Riga	2	17	3	2
Swedish	2	0	2	13
Masts, Quebec red pine	3	10	5	5
,, yellow pine	3	10	5	5
Lathwood, Dantzic, fm	3	15	5	10
,, St. Petersburg	5	10	6	10
Deals, pr C., 12 ft. by 3 by 9 in.,				
Quebec, white spruce	12	0	17	0
St. John, white spruce	12	10	14	0
Yellow pine, per reduced C.				
Canada, 1st quality	16	0	17	10
2nd do.	12	0	12	10
Archangel, yellow	11	0	12	0
St. Petersburg, yel.	11	0	12	0

Finland	£7	0	£8	0
Memel	7	0	9	0
Gothenburg, yellow	9	0	10	0
,, white	8	0	9	0
Gefle, yellow	10	0	11	10
Soderham	8	0	9	10
Christiania, per C., 12 ft. by 3 by 9 in. yellow	10	0	12	10
Flooring boards, per sq. of 1in., first yel	7	6	10	6
First white	7	0	9	6
Second qualities	6	0	7	0
PUMICE STONE pr ton	6	0	8	0
OILS, &c.				
Seal, pale per tun	37	0	37	10
Sperm body	84	0	85	0
Cod	39	0	40	0
Whale, Sth. Sea, pale	37	0	37	10
Olive, Gallipoli	50	0	0	0
Cocoanut, Cochin, ton	42	10	44	10
Palm, fine	39	10	0	0
Linseed	30	10	0	0
Rapeseed, Eng. pale	44	10	44	15
Cottonseed	29	0	35	0

METALS.

LEAD —

Pig, Foreign	per ton	£18	15	0	£19	5	0
,, English W.B.	do	20	5	0	20	15	0
,, Lead Co.	do	20	5	0	20	15	0
,, Other brands	do	19	5	0	20	0	0
Sheet Milled	do	20	10	0	0	0	0
Shot, Patent	do	21	0	0	21	10	0
Red or Minium	do	19	15	0	20	10	0
Litharge, W.B.	do	0	0	0	0	0	0
White Dry	do	30	0	0	0	0	0
,, ground in oil	do	0	0	0	0	0	0

COPPER :—

British—Cake and Ingot	per ton	70	0	0	0	0	0
Best Selected	do	71	0	0	0	0	0
Sheet	do	75	0	0	78	0	0
Bottoms	do	80	0	0	0	0	0
Australian	do	71	0	0	72	0	0
Spanish Cake	do	0	0	0	0	0	0
Chili Bars	cash	64	0	0	65	0	0
,, refined ingot		70	0	0	73	10	0
Metal Sheathing and Rods	per lb.	0	0	6⅝	0	0	6¾

Trade News

TENDERS.

CATERHAM.—For house in Harestone-valley, Caterham, for Col. Vibley. Mr. R. Martin, architect. Quantities supplied by Mr. Frederick Sparrow, 80, Richmond-road.

Dove Brothers	£2215	0	0
Hearle	2805	0	0
Langmead and Way	2067	0	0
Jarrett	2040	0	0
Turner and Sons	2039	0	0
Chappell	2037	10	0

LONDON.—For pitch pine seats for the West London Synagogue. Architects: Messrs. Davis and Emmanuel; builders, Messrs. George Myers and Sons.

George Myers and Sons	£2450
Messrs. Hunter	2097
W. H. Lascelles	1560

ACTON W.—For the completion of three houses in Park-road, North Acton, W., for J. C. Taylor, Esq. Edward Monson, jun., architect.

Rhodes and Roberts	£725	10	0
Nightingale	683	0	0
Rankin	650	0	0
Heaver and Coates	645	0	0
Hoare and Cleland	645	0	0
Stocks and Tidey	630	0	0
Hurst	609	0	0
Whiting	599	15	10
Holding and Dickens	550	0	0
Bowler	550	0	0
J. and R. Whittaker	549	0	0
Fanthorpe	547	16	6
Scarlett and Elmer	486	0	0
Warr	476	5	0
Arrived too late.			
Harrison and Son	740	0	0
Taylor	420	13	0

BRIGHTON.—For alterations and additions to the Town hall, Brighton. (Town Surveyor's estimate £2,200).

Blackmore (accepted)	£2212

CLARE (Suffolk.)—For the erection of a bridge over the Chilton Water, for the Wickhambrook Highway Board, from plans by the Board's surveyor.

Pudney	£175	0	0
Grimwood and Son	146	0	0
Death and Taylor	98	10	0
Fell (accepted)	98	0	0
Rivett	95	0	0

DEPTFORD.—For making-up and paving Walpole-road, Hyde-street, Stanley-street, and Warwick-street, Deptford, for the Greenwich District Board of Works:—

	Walpole road.	Hyde street.	Stanley street.	Warwick street.
Etheridge	£225	£318	£280	£498
Hobbs (accepted)	305	319	279	549
Mowlem and Co.	296	335	291 10s.	560

EAST PECKHAM.—For building house for Mr. Thompsett. Messrs. Habershon and Pite, architects.

Tonbridge and Derrys Dover	£1789
Bond, Fraunt	1690
Martin, Yalding	1685
Rhodes and Roberts	1675
Bowler, Battersea	1600
Pearce Brothers, London	1554
Patman and Co., London	1545
Nightingale, London	1515
Perridge, Tonbridge	1420
Whittaker, London	1276

FULHAM PRISON.—For boundary walls and additions to Fulham Convict Prison. Quantities supplied by Mr. T. Nixon.

Taylor and Pitts	£4463
Patman and Fotheringham	4184
J. Foster	4131
Nixon and Son	4100
Aviss and Co.	3988
Gammon and Sons	3925
Holland and Hannen	3884

HENDON.—For erecting a villa. Messrs. Salomon and Jones, architects.

Barber and Groome	£3590
Fish	2895
Richards	2870
Jackson and Shaw	2614
Cooke	2580
Sharpington and Cole	2555
Nightingale	2525
Heath	2188
Bowles	2128

LEAVESDEN.—For kitchen and laundry fittings to S. Pancras Industrial Schools, Leavesden, Herts.

Brown and Green	£1075
Fraser and Son	850
Benham and Sons	740
May (accepted)	672

LONDON.—For new front and other works to be done at No. 126, Curtain road, and at warehouse, William-street, Shoreditch, for Mr. Thomas Miller. Wm. Mundy, architect.

	William street.	Curtain road.	Total
Chessman	£ —	£ —	£ 960
Brown and Sons	315	640	955
Higgs	321	634	955
Blackmore and Morley	310	625	935
Goodman	318	569	887

LONDON.—For the restoration af S. John's Church, for the churchwardens and committe of the vestry of Bethnal-green. William Munday, architect. Quantities supplied.

F. and F. J. Wood	£4376
Higgs	4170
Larke	4147
Blackmore and Morley	3990
Brown and Sons	3750
Conder	3639
Scrivener and White	3684
Eaton and Chapman	3637
Sewell and Sons	3463
Hill, Keddell and Co.	3296
King and Sons	3294
Ennor (accepted)	3278
Surveyor's estimate	3510

LONDON.—For the erection of stables at St. John's Wood. H. H. Collins, architect.

Perry and Co	£2674
Merritt and Ashby	2596
Ebbs and Sons	2579

ST. LEONARD'S-ON-SEA.—For St. Paul's schools and teacher's residence, St. Leonard's-on-Sea. Jeffery and Skiller, architects.

Thomas, London	£2465	0	0
Parks, Hastings	2180	0	0
Hughes, St. Leonard's	2125	0	0
Nightingale, London	2057	0	0
Rodda, St. Leonard's	1999	0	0
Smith, Portsea (too late)	1995	19	10
Howell, Hastings	1939	0	0
Bridgland, Hastings	1866	0	0

LONDON.—For works at Portman Chapel, Baker-street, Portman-square. C, Eales, architect.

Clemence	£7,399
Holland and Hannen	6,398
Ebbs and Son	6,230
Janson	6,127
Scrivener and White	6,121
Kelly Brothers	5,963

WORCESTER.—For alterations and additions to Stoke Prior Mills, near Bromsgrove, Worcestershire for W. H. Wall Esq. W. Seckham Witherington, architect, 135, Cheapside, and Worcester.

Charley, Birmingham	£1462	10	0
Lovatt, Wolverhampton	1015	7	0
Wood & Son, Worcester (accepted)	738	10	0
Nelson, Dudley	736	0	0

CONTRACTS OPEN FOR BUILDING ESTIMATES.

COASTGUARD CONTRACT, Aug. 9.—For the erection of a coastguard station at Johnshaven, in the county of Kincardine, Scotland. Director of Works Department, Admiralty, Spring Garden-terrace, London, S.W.

LANCASHIRE AND YORKSHIRE RAILWAY, Aug. 16.—For the construction of a branch railway from North Dean to Stainland, length about 1¾ miles. Wm. S. Lawn, Secretary, Hunt's Bank, Manchester.

ROTHERHAM AND KIMBERWORTH LOCAL BOARD WATERWORKS, Aug. 16.—For the construction of a storage reservoir on the Ulley and Morthern Brooks, near Packman's Bridge. W. Whitfield, Clerk to the Board, Board of Health Offices, Howard-street, Rotherham.

STANNINGLEY, Aug. 11.—For the erection of two dwelling houses. Joseph Roberts, Architect, 18, East Parade, Leeds.

ST. MARY ABBOTT'S, KENSINGTON, Sept, 7.—For the erection of a new infirmary and other buildings adjoining their workhouse. Reuben Green, Clerk to the Guardians, No. 1, Devonshire-terrace, Wright's-lane, Kensington.

HORSHAM, SUSSEX, Aug. 9.—For the erection of a villa residence, with conservatory and stabling, to be built at North Parade.

BRUTON CHURCH (Somerset), Aug. 12.—For the restoration of the nave of the above church. Messrs. Slater and Carpenter, 4, Regent-street, S.W.

LEEDS, Aug. 12.—For the erection of a new Wesleyan Chapel, proposed to be built at Garforth, near Leeds. Geo. Smith, architect, Popplewell's Chambers, Bradford.

LINCOLN, Aug. 15.—Parish church, St. Martin's.—For the building of a new church. William Stork Beckitt, Architect, Bridlesmith Gate, Nottingham.

LEEDS, Aug. 9.—For the whole or any portion of the works required in the erection of a chapel, with schools and class-rooms, in Belle Vue-road. G. Gardiner, 9, East Parade, London.

LEEDS, Aug. 12.—For the various works required in the erection and completion of a villa residence at Woodland Grove, Chapel Town-road. Alfred H. Thompson, architect, 14, Park-square, Leeds.

CASTLE CAREY SEWER AUTHORITY, Aug. 13—For providing and laying about 3,300 yards of best glaze stoneware socket pipe sewers, from 9in. to 15in in diameter; also the necessary junctions, cleansing pipes, syphons, gullies, sewer ventilators, &c. Also for erecting two deodorising tanks at the sewer outfall. James Lancaster, clerk, Wincanton.

LEEDS, Aug. 6.—For the various works in fifteen houses and three shops in Hunslet-carr. Richard Towse, architect, Dewsbury-road, Leeds.

LEIGH, Aug. 20.—For rebuilding the parish church. Architects, Messrs. Paley and Austin, Lancaster.

LEEDS, Aug. 20.—Boar-lane Improvement.—For the erection of two shops for the Leeds and Yorkshire Land, Building, and Investment Company (Limited). Thomas Ambler, architect, 9, Park-place, Leeds.

CHISWICK (Middlesex), Aug 9.—For constructing and maintaining in complete repair for six months a 15in. pipe sewer and other works in connection therewith, in Manor House-lane, Chiswick. Also for laying and maintaining in complete repair for twelve months a 2½in. York footway pavement, 5ft. wide, from the Roebuck public-public-house to the Second Pack Horse, on the northside of the Turnham Green High Road, together with all necessary straight and circular 12ft. by 6ft. Aberdeen curb and carriageway paving. Robert Finnis, Clerk.

ALTRINCHAM LOCAL BOARD OF HEALTH.—SEWAGE WORKS. August 10—For carting and laying about 2,100 yards of 2in. pipes between Broadheath and the Woodcote Farm, Sunderland. C. H. Hinde, Acting Clerk to the Board.

ASTON UNION NEW WORKHOUSE, ERDINGTON.—Extension of Notice, Aug. 8.—For the erecting and fitting of the engineer's work at the above workhouse. John Lumby, Clerk to the Guardians, Aston Union Offices, Aston-road, Birmingham.

BRADFORD, Aug. 9.—For the erection of a new police-station at Gate-street, Manchester-road. W. F. McGowen, Town Clerk, Corporation offices, July 26, 1870.

BATH STONE OF BEST QUALITY.

RANDELL, SAUNDERS, and COMPANY, LIMITED. Quarrymen and Stone Merchants, Bath. List of Prices at the Quarries and Depôts; also Cost for Transit to any part of the United Kingdom, furnished on application to

BATH STONE OFFICE,
Corsham, Wilts.

ADVT.]

THE BUILDING NEWS.

LONDON, FRIDAY, AUGUST 12, 1870.

WORKMEN'S INTERNATIONAL EXHIBITION OF 1870.

IN previous Working Men's Exhibitions the preponderance of mere amateur work, produced by men whose ordinary occupations bore no analogy to the work, did much to discredit the idea. It would have been as absurd to look for real excellence, or a means of advancing art education and technical knowledge, in oil paintings by coal-heavers, mechanical contrivances by lawyer's clerks or postmen, and other incongruities of the same kind, as it would be unkind and unwise to criticise the result with a very close scrutiny. So many allowances had to be made for the difficulties of production that the few words of general praise which they received were due rather to the industry and patience of the exhibitors than to the excellence of the work. Skilled workmen, as a rule, stood aloof from such exhibitions. They could appeal to the judges only upon the ground of superior workmanship, and would naturally decline competition with amateurs, who claimed a charitable consideration of their many disadvantages. Hence one became inclined to class the so-called Workmen's Exhibitions with other benevolent institutions for economizing leisure and preventing vice, but—barring the occasional chance of their bringing forward an unknown Arkwright or Watt —the expectation of technical advancement from them had to be entirely given up.

We have remarked, in our previous article upon the presence of many articles of mere amateur production in this exhibition, and would suggest that if not entirely banished from future exhibitions—which is perhaps not quite possible or desirable—they should at all events be exhibited by themselves. When articles have to be judged by different standards it can serve no useful purpose to place them side by side. If separated, it would be practicable to caution visitors to expect no more from them than that the exhibitors have done "the best their circumstance allows;" while in the other part of the exhibition the very best result that skill and industry can bring about might fairly be expected, and every exhibitor would expect to be criticised and tested with the utmost impartiality.

Class 8.—Building Appliances.

In this department, according to the catalogue, Great Britain numbers 71 exhibitors, Italy 10, the Netherlands 9, Austria 1, and Bavaria 3. Of foreign countries, that of the Netherlands is by far the most interesting, containing, as it does, a series of drawings and carpenter's work executed by the pupils of the Industrial School for Sons of Workmen at Amsterdam. This institution affords systematic technical instruction to the sons of journeymen, and the results shown here form a special feature, to which we hope to revert. The want of classification renders a systematic examination and comparison of the objects exceedingly difficult—almost impossible. After some trouble, we found a stand where some building appliances were placed, but articles not belonging to the class were there, and others we discovered, some in one place and some in another—some were not found at all; and neither catalogue nor direction in the building could show us where they were. Moreover, we dare not trust the catalogue for directing to everything of its class, for among building appliances we find catalogued "watchmen's clocks," "hinges for dressing cases," "jewel and dispatch boxes," "model of horizontal slide valve engine," and—a "doll's house!" If, on closer inspection, we find the same confusion in other classes, we feel bound to say that, however well the exhibition may suit the thousands who are attracted by the bazaar arrangements—which the managers appear very anxious to enlarge—and by the evening brass band, the exhibition must prove a failure as to its professed and legitimate objects.

Among the seventy-one exhibitors of Great Britain, ten are for models of buildings, or parts of buildings, exhibiting no novelty or improvement whatever, and if remarkable at all, only so for the neatness of the modelling. We except, however, the well-known tripartite labourers' cottages exhibited by Mr. Henry Martin, secretary of the Cottage Improvement Society, Arundel-street, Strand. There are two designs by workmen for improved workmen's dwellings. One only, however, No. 54, by Thomas Smith, builder's-foreman, Halstead, was discoverable. One might fairly expect to see more effort made in this direction by the working men themselves. They should make use of exhibitions like the present to tell those who are inclined to build for their comfort what they really do want for themselves.

There are several improvements in window-sash frames and ventilators. The first we noticed was the work of a journeyman carpenter, Robert William Parsons, A 14, Pink's Row, Lever-street, St. Luke's, catalogued in class 3, No. 391. In this, the lines upon which the sashes are hung are fastened by a fitting at the bottom of the line by which the sash can be removed and replaced without nailing the line. A pin passing through the bead at the side is made to be removable, so that the window can be easily taken entirely out for cleaning, &c., without trouble. This model is also fitted with a perforated zinc ventilator at the top, which can be regulated to drop to various lengths, and permit the top sash to be opened to ventilate the room without draught. The invention is very simple and meritorious. Thomas Smith, shipwright, Southampton, exhibits a regulating ventilator, in which glass is fixed louvre-fashion behind the top sash of an ordinary sash window. W. T. Frewer, bricklayer, Holland-street, Blackfriars, has an improved window-sash, with a slide which can be withdrawn and allow the sash to be turned round for cleaning. Mr. Benjamin Abraham, builder, Hind-street, Poplar, exhibits a pair of sashes and frame, in which he combines, by the addition of hinged movements, the advantages of the French casement and the sash window. Henry Omer, decorator, Mile End-road, E., shows sash-frame intended to effect the same objects as the preceding. The construction appears rather complicated, as will appear from the following description:—"Unfasten and pull up both sashes a few inches, which will allow the bead to be removed so as to allow the sash to be taken out. The left-hand bead will then lift up and come out, so as to admit of the sash being taken out. Three studs are fitted to bead, which is made to take in and out of frame, and fit close to sash and frame to prevent draught. The parting bead on the same side will fold back, as it is hung on three brass hinges, allowing the top sash to come out (which is made the width of parting bead narrower than bottom sash). The lines will unhook from sashes on both sides, or from one side only and left hanging by the other, as may be approved by the cleaner."

Mr. Henry Morgan, carpenter, 40, Rochester-row, Westminster, has an invention consisting of a double-action pulley for single and double-action doors. This consists of a spring upon a drum fixed in the doorpost at the top, and connected with the door by a strong catgut rope. Its working is very simple and easy, and it appears to be well adapted for doors where, from the presence of arches or iron girders, as in fireproof buildings, for example, sufficient space is not left for the introduction of the ordinary box spring. The same inventor has also a sash with pulley without weights, in which one sash is made to balance the other; a self-acting balance shutter, likewise without weights; and various improvements for the doors of railway carriages, in the shape of small india-rubber insertions, to prevent noise from shaking of window-frames, slamming of doors, &c.

The model of a geometrical staircase (No. 26) by Samuel Mead, joiner, Calthorpe-place, Birmingham, is deserving of great attention, if only for the excellence and finish of the model itself. But the exhibitor deems the model an improvement upon the ordinary geometrical staircase, the strings being so constructed as to develope the scrolls more gracefully than the usual curtail step.

On the whole, we can hardly think the workmen employed in the building trades have done themselves justice in this exhibition. One workman exhibitor accounted to us for the paucity and want of variety in the objects shown. "Lor, sir," said he "there was very few of 'em as knowed anything about it, and them as did, and had got any improvements, did not like to bring 'em out because of the patent. Why, I knowed nothing about the Act myself till a day or two before the exhibition opened, or I should not have been here myself."

For the benefit of those who do not know about "the Act," we add that a recent Act of Parliament gives to workmen exhibiting here the same privileges as if they had paid a fee to register their inventions for six months. This affords them time to get their improvements tried, discussed, and taken up; and if this fact were more generally known we are sure that many who are hiding their contrivances away would avail themselves of the opportunity, and the building department would make a more respectable appearance.

◆

THE WELLINGTON MONUMENT IN S. PAUL'S CATHEDRAL.

THE grandest project which has in modern times been set afloat in this country is the noble scheme for the completion of the decorations of our magnificent Metropolitan Cathedral at an expenditure of probably £200,000; and, in addition to these decorations, one of the most ambitious objects in the Cathedral would be the monument which a grateful people has decided to erect to the memory of its great warrior—Wellington. The monument, ordered in 1856, is not yet visible; and a very remarkable Parliamentary paper just issued explains the present position of the affair, and is most opportune in its appearance, as affording the subscribers to the decoration fund some idea of the manner in which their contributions will be husbanded, and the result likely to be obtained by their liberality.

In 1856 the Government invited sculptors and others to submit in competition models and designs for the monument which it had been determined to erect in memory of the Duke of Wellington. In answer to the invitation, eighty-three designs were submitted, and the authors of nine of these were selected as deserving of premiums. In 1858 the then First Commissioner of Her Majesty's Works appointed Mr. Alfred Stevens as the sculptor to erect the monument, and also appointed Mr. F. C. Penrose, the cathedral architect, to superintend Mr. Steven's work, and "to certify from time to time the amount of money to be paid to him on account." A sum of £20,000 was voted by Parliament for the monument, and in September, 1858, a paper was sent to Mr. Stevens from the Office of Works offering him £11,000 for his monument, thus reserving £9,000 for the collateral works. Subsequently, at Mr. Stevens' pressure, the amount fixed for the completion of the monument—including a full size model to be set up in the Cathedral—was £14,000. Mr. Stevens now goes to work, and takes a lease of extensive premises for the purposes of the model, and on November 19th, 1858, we may consider it as having been commenced. A period of about two years elapses, during which Mr. Penrose has certified for various sums to be paid on account; and on December 28th, 1860, a further sum is about to be paid to Mr. Stevens, which, with the other payments, makes a total sum of £2,200 advanced to him up to this date, and we find him willing to guarantee that the model shall be completed forthwith, without a further request for payment, if another £600 is advanced to him, making altogether £2,800. The last £600 does not, however, seem to have been advanced to him. Another long period elapses, during which the First Commissioner has been anxiously inquiring after the model; and on December 6, 1862, Mr. Stevens assures the First Commissioner that the model is progressing, and asks for a further sum of £2,466, which, with the £2,200 already received by him, will make £4,666—a third of the entire sum to be paid to him—and which, it is stated, is a customary arrangement among sculptors. The £2,466 is paid to him in February, 1863, on condition that the model is complete and ready for inspection in S. Paul's Cathedral within fifteen months from the day on which such sum is received by him. There is now a blank in the correspondence till February 19th, 1864, when the First Commissioner intimates to Mr. Stevens that the time is approaching for the completion of the model, and other reminders on June 27th and August 13th, 1864, to the effect that such time has elapsed. No answer is received by the Commissioners to either of these letters; but, on March 25th, 1867, Mr. Stevens writes to say he is doing his utmost to hasten the work; and on 17th January, 1867, Mr. Penrose writes to the effect that the model is so far completed that the execution in the permanent materials might be properly commenced if the general design is considered satisfactory by the First Commissioner. On March 12th, 1867, we find a further sum of £2,800 is directed to be paid to Mr. Stevens. The work drags on, and after other advances have been made, the total amount certified by Mr. Penrose has amounted to £12,466. At this date, December 20th, 1869, Mr. Penrose claims his commission of 2½ per cent. on the amounts paid to Mr. Stevens and to other artists. On December 29th, 1869, he sends his statement of the whole matter as it stood respecting Mr. Stevens. On the 9th of April, 1870, the First Commissioner himself visits the studio of Mr. Stevens, the result of such commendable visit being that on April 14th, 1870, the Director and Surveyor of Works are appointed to meet Mr. Penrose and Mr. Stevens for the purpose of making a report on the then condition of the work. The report is made by Mr. Douglas Galton and Mr. Henry Arthur Hunt, who estimate that to complete the monument, irrespective of Mr. Penrose's claim, will cost a sum of about £15,000, or roundly, a sum equal to the amount of the original contract. A letter of the 20th July, 1870, from the First Commissioner puts an end to the employment of Mr. F. C. Penrose as consulting and certifying architect, and another letter of the same date determines the contract of Mr. Alfred Stevens.

The perusal of this correspondence cannot fail to strike the reader as possessing a peculiarity in the system of granting certificates adopted by Mr. Penrose, and as evidencing the patient long-suffering by the Commissioners of Works throughout the whole wearily-protracted period the monument has been in hand; and any professional man indulging in such, to say the least, loose conduct of the interests entrusted to his care cannot object to his system being criticised and analysed in a decisive manner. On Mr. Penrose's appointment as certifying architect we find him commencing his duties with remarkable activity. Within six weeks from Mr. Stevens's agreement to do the work Mr. Penrose certifies for £400, when the "skeleton frame" only for the "model" was in hand. Other advances are certified by Mr. Penrose, although the model, even, is not completed, and these sums are gradually approaching the amount of the contract—which fact should have opened Mr. Penrose's eyes, and determined him to calculate the amount of work to be done, and the sum left to do it. Had he thus proceeded it would have been seen at once that to complete the monument would involve an outlay far above the small sum left from the total amount of the contract, and Mr. Stevens's pleadings for further advances should have convinced Mr. Penrose that he (Mr. Stevens) was not in a position to complete the work without such additional sum having been advanced to him; but throughout, the fact of a contract having been entered into seems to have been ignored by Mr. Penrose, and he appears rather to treat the matter as if it were a question of his own estimate of the art-value only, and to be quite regardless of the fact of a fixed contract sum having been entered into; and in his statement of December 29th, 1869, to the Office of Works, he quite confirms this view, for he says:—"I am certain that, however far from complete the monument may be when the stipulated sum of £14,000 has been expended, it will be fully worth the money—even quantity for quantity—as compared with the price of other monuments." This, be it remembered, is a statement made by an architect who is employed to certify from time to time the instalments due on the gradual execution of a contract. Such a statement could not but awaken the Office of Works, and draw from the First Commissioner a definite request, and accordingly the Director and Surveyor of Works are requested to report upon the condition of the work; and such report reveals that the sum voted by Parliament for the monument complete was £20,000, that Mr. Stevens had been paid £13,006, and other artists £4,900, making a total of £17,906, and the estimated future expenditure being £15,600, makes the total expenditure for the work, which was to have cost £20,000, amount to £33,506, exclusive of Mr. Penrose's claim. And it must be borne in mind that a considerable concession was made in allowing the model to remain in the studio of Mr. Stevens, at Hampstead, instead of being set up in S. Paul's Cathedral, as originally intended and contracted for.

That conduct such as the above should have resulted in the discharge of Mr. Penrose and the termination of Mr. Stevens's contract can surprise no one, the only wonder being that so important a work should have been allowed to drag on for so many years, and that the discovery of the peculiar method of procedure adopted by both sculptor and certifying architect should not have been before made. The Parliamentary paper is completed by a serious of sketches shewing the present condition of the monument, and the work required to complete it; and the consideration of these delineations renders it a matter of much surprise that an architect appointed to a responsible position should have allowed himself to take the course which this correspondence shows Mr. Penrose to have taken. He may be able to explain and justify such conduct, but to be of value this explanation must be prompt and explicit.

◆

BUILDERS *VERSUS* ARCHITECTS.

It is impossible not to sympathise with two of the letters that appear, one from "A Surveyor" and the other from "Triangle," in our last week's issue. If any of our readers have not perused them we recommend them to do so, and see how well-timed is our oft-repeated invitation for such communications. If those who *can* write, but never professionally write (by the line), would oftener contribute a letter now and then anent the vexed questions of the day, how much good to the professional body we represent would be effected! It often happens that such "outsiders" (to borrow a sporting phrase) hit upon a useful idea that ought not to go unnoticed, but which, in the pressure of other matter, might be—and often is—passed over unnoticed by the professional contributors to our journal. We wish our columns of "Intercommunication" and "Correspondence" to serve as really a sort of architectural *plebiscite*, by whose utterances our readers may be both guided to the adoption and encouraged to the adhesion of all that is true and wholesome for both architects and builders.

"Surveyor" discourses well and usefully on a recent movement of the Institute of Architects, by which it is proposed (in dealing with builders) to constitute the seven years' members of that body, yclept "Fellows," arbiters for all time in disputes that may arise touching building contracts. He shows—we think conclusively—the absurdity of such a scheme. Let us examine it, perhaps somewhat more closely than our correspondent himself has done, judging from his own brief and intelligent strictures on the scheme.

It is, what ?—a scheme of arbitration intended to operate on builders. Where ? In the metropolis ? Oh ! no; throughout all England. Now let us inquire what is the position of the Institute of British Architects with respect to builders out of the metropolis. The answer to be truly made and maintained is this:—The Institute is a London club of architects, with a *coterie* of provincial antiquaries and *dilletanti* (all highly respectable) affiliated to it, with here and there some other provincial architects who belong to it, and pay their two or four guineas subscription to it merely to add A.R.I.B.A. or F.R.I.B.A. to their names, just as Mr. Street, with like professional pride—but far higher consistency, merit, and honour—appends A.R.A. to his signature at the corner of a contract drawing. A.R.A. (Associate of the Royal Academy) *is* a *bona fide* passport to professional distinction. It means a host of things, all of them meritorious and well known to the true architect, which are by no means peculiar to—nay, which may be utterly wanting in—the man who can merely flaunt in your face (or in the "Post-office Directory") his F.R.I.B.A. Mr. Street himself is an F.R.I.B.A. We don't deny it. Just in the very self same way wherein Rubens and Wren were "Sirs;" but whoever thinks of the mere knighthood of "*optimus Christopherus Wren*," or of the "Sir" reverence of Peter Paul Rubens ? We question, indeed, whether any one of our English painters in fifty is even aware that Rubens ever was "Sir Peter." We have ourselves met with many who were utterly unconscious of the fact.

However, we are losing sight and mind of our correspondent the "Surveyor." He says, and truly, the training and acquirements of a Fellow of the Institute do not qualify him for—nay, make him utterly unfit for—the coveted post of arbiter in matters of dispute between architects and contractors, or between architects and clients; and we quite recognise the cogency of his argument. A Fellow of the Institute in London is an architect, who by the provisions of his own Charter and Bye-laws, is precluded from measuring-up, estimating, and valuing any work of which he is not the proper architect; and who, as a rule (being quite unused to that sort of thing), *never* measures up or values his own works; but calls in a surveyor to do it for him, and arbitrates on that building surveyor's report. Such men, however learned as antiquarians, or eloquent as speakers in Conduit-street, will never be able to get builders to have confidence in them, nor will they be able to officiate as arbitrators or referees in London.

In London, business of this kind will of necessity fall into the hands of London building surveyors—a very intelligent class of men. In the provinces, the functions of a seven years' fellow of the Institute would be simply *nil:* and for this reason—that however disposed a provincial architect (to the scorn of fellow provincials) may be to put "F.R.I.B.A." to his name, he virtually would ignore the Institute scheme condemned by our correspondent. He, Fellow though he is, takes out, as a general rule, his own quantities, and measures up and adjusts his own "extras and omissions," and allows, country architect as he is, no *imperium in imperio* to come "betwixt the wind and his nobility" (*i.e.*, management of his contract) in the shape of a building or quantity surveyor. Let anyone who doubts this institute a provincial committee of inquiry, and he will find how local is the influence and rule of the Institute. Let him look east, west, north, or south out of the metropolis—let him, for example, take Hastings, in Sussex, for his southern point, up to Manchester, Preston, and Liverpool for his northern point; he will find the *animus* and the *consensus* of English architects to be, to all intents and purposes, dead against the *regime* of of the Institute. The Institute, indeed, will have to alter its *regime tout cela*, and to go back into the olden ways of Sir John Soane and others of its early advisers and benefactors, ere it will find itself *in situ* to carry out the ambitious arbitration programme it has laid down, so truly condemned by our correspondent.

We could say a good deal, did space suffice, in advocacy of the letter of "Triangle;" and we may, indeed, resume the topic. Let us say for the present simply this: It is absurd for architects to suppose that a builder may not understand architecture. There are very many builders (and many more parsons) who comprehend it better than too many professional architects, loth though we may be to advocate their claim to the professional vocation of the architect.

◆

SOUTH KENSINGTON MUSEUM.

A NEW reredos for the parish church, Cheddington, Buckinghamshire, has recently been placed for temporary exhibition in the North Court of the South Kensington Museum. It is executed and lent by Messrs. Powell & Sons, and consists entirely of painted tiles. The subject is divided into three panels by means of upright bands. Of these, the centre one, in which is represented the Last Supper, is the reredos proper, the side panels, filled in with diaper-work, serving as decorations for the remaining portion of the east wall of chancel. The space behind the Communion Table is filled with grey tiles, and immediately beneath the picture is the following inscription:—"In memory of mercies received at Cheddington by Lionel Dawson Damer, Rector, 1862-1870." The chief peculiarity of the work is the way in which the tiles are divided into irregular-shaped pieces, after the manner of stained glass, and the deadness or flatness of the painting. The colours employed are very low in tone, and in the sombre light of an ordinary chancel would, we imagine, have very little effect. The side-panels each bear a cross composed of blue bands. In the centre of one are the initials J.H.S., and in the other the monogram X.P.C. The letters are formed in mosaic work on a gold glass mosaic ground. The very low tone of the whole work causes the white table cloth in the altar picture to stand out in a very staring way; and the head of Judas, who is shown with dark hair, seems to be about six feet in front of the other figures. What we have most to find fault with is the difference in the quality of the art employed upon the various parts of the work. While the background and the drapery is crude and rough in the extreme—almost affectedly so—the heads and extremities are finished like miniatures. Again, from the absence of the lead lines, and the want of artistic "keeping," some of the principal figures sink into and are almost indistinguishable from the background; while others have no connection with the remaining portions of the subject, appearing to be stuck on in front of them. We are at a loss to understand what is the merit of the peculiar method of colouring which is practised in this work, and why it has been considered necessary to make the design look as if it had been put in in the usual way, and then, in consequence of being too forcible, had been partially washed out. There is an unsubstantial, waxy look about the work which is far from pleasant, and we cannot hail the process, if it is a new one, as in any way a success.

In the South Court, a magnificent chimney-piece, of Milanese mosaic work, has just been erected. The design is heavy, but the arrangement of colours and the enrichments in marble arabesque are very graceful. In the majolica staircase we notice a trial of a new mode of decoration, patented by Messrs. Minton & Co., which promises to be a great success. Little hexagonal testeræ are joined together in frames, and are then glazed and painted on in any requisite subject. They can thus be adapted to any surface laid to a perfectly true face.

◆

WORKMEN'S EXHIBITIONS: THE CAUSES OF THEIR FAILURE, AND SOME PRACTICAL SUGGESTIONS FOR THE FUTURE.

By a Working Man.

THE strictures upon the Workmen's International Exhibition contained in the BUILDING NEWS of the 29th ult. are certainly well deserved, and may be applied with equal justice to nearly all of the so-called Exhibitions which have been held in this country during the last five or six years. No surprise need be expressed at the result. As expositions of the unaided and genuine production of the individual workman, such exhibitions are decided failures, and such will be the inevitable result so long as they are carried out on the same principles as those on which they have hitherto been managed. We have had many what have been called industrial exhibitions which have been very successful financially, but utter failures in the great object for which they were originally projected. In the North, we have had so-called Industrial Exhibitions at Preston, Wakefield, Lancaster, Darwen, and Bolton—all of them successful in making money, but all of them, without exception, owed their success in a great measure to the adventitious aids of music, concerts, marionettes, fairy fountains, &c., &c. All of them were to a great extent fine art exhibitions and curiosity shops. They did some good, no doubt; but, considered as workmen's exhibitions, they were most decidedly a delusion and a sham, and might as well never been held so far as the working man is concerned, for the whole of them were mere market halls for the display of the tradesmens' and manufacturers' goods, with large advertisements displayed, crying loudly, "What d'ye lack? What d'ye lack?" In fact, each exhibition had only provided another place of business for each tradesman to display his wares in.

The idea of an international exhibition was a mistake from the first, so far as the individual workman was concerned; its promoters have, no doubt, been actuated by the purest and best motives, and they have endeavoured to carry it out to the best of their knowledge and skill, but, unfortunately, "the best laid schemes of mice and men gang aft agley," and so it has been with this project. It has degenerated into a vast advertising medium for the benefit of the employers, but says very little about the workmen. Now this, and all other so called workmen's exhibitions, worked on the same principles, carry within themselves the elements of failure, inasmuch as they allow capital to be represented instead of bonâ fide labour; and thus two causes of failure are introduced, injustice is done, jealousy is excited, and discouragement is produced. Let us look for a moment at the true aspect of the case. These exhibtions all set out with the express intention to discover and bring out the talent and skill of the individual workman, so that his work may be seen, and he encouraged to persevere and improve himself in the particular trade or profession he earns his subsistence by; or, if he is possessed of exceptional skill, or he has some particular article he has devoted time and study in producing, he has the opportunity of exhibiting it, and so becoming widely known; rewards are offered, and every inducement held out, so that he may be encouraged to exhibit and benefit himself. And what is the result? Failure. What is the proportion of individual workmen who take advantage of these liberal offers? Why, a very small percentage indeed; and this cannot be wondered at. In face of the fact that the individual workman has to compete at an immense disadvantage—that he has to stand unaided against the combined power of capital and associated skill—for it is unquestionable that there can be no comparison instituted between work produced by one man in his spare hours, after the daily labour is done by which he has to support himself, and that work which is produced in the workshop of some large firm with the combined skill and capital of the employers and workmen, having everything at hand to facilitate and perfect the work for exhibition. In these cases the conditions are so wide apart and so essentially different, and, of course, in favour of the firm, that we cannot wonder at the paucity of exhibitors of that class for whom these exhibitions are professedly established. The employers are ready enough to encourage these projects, knowing well that they will be able to find their advantage in them, either by hook or by crook (to use a homely saying). Now as regards the workman, here is, as he considers, an injustice perpetrated; and it is the height of foolishness to suppose for a moment that he is blind to the fact. He sees plainly enough that it is in the interest of capital that these exhibitions are essentially carried out, and consequently he feels no interest in them, and will not put himself out of the way to produce anything for them, knowing well that somehow or another he will be, as a personality, covered up and hid out of sight behind his employer's mantle. Then, again, the workman who does exhibit on his own account sees his modest production placed next some splendid article, perhaps of the same kind, manufactured by a large and possibly celebrated firm; and the pet child of his hand and brain—the product of weeks of toil and time snatched from the hours which should have been devoted to rest and sleep—is dwarfed and outshone by his more pretentious neighbour; and, as a natural consequence, jealous and bitter feelings are engendered—he gets discouraged and does not exhibit again.

So far as we are aware the best exhibition as a *bona fide* workmen's exhibition was the one held in Manchester in the year 1865, a notice of which will be found in the BUILDING NEWS for March of that year. The exhibition was originated by a society of grainers and decorators in that town, and was managed exclusively by working men. The conditions of the exhibition and the regulations adopted were carried out on the only true conditions on which such exhibitions should be held. The speciality of the art-workmen's exhibition (of which we are writing), as one would naturally conclude, considering its origin, was a display of specimens of house decoration, consisting of panels and doors in various styles of ornamentation, church decorations, and a large number of specimens of graining and marbling, ornamental plaster work, wood and stone carvings, gilding, enamelling, &c., wrought-iron work, and, in fact, almost everything of an ornamental character connected with the building trades, and some few of the usual miscellaneous articles having no special use; but no stalls or shops for the sale of articles, nor placards for advertising purposes usually displayed at these exhibitions. But the peculiar feature of the exhibition was the stringent regulation, which was rigidly enforced, that no article should be exhibited without the name of the workman being appended to the article exhibited, and also inserted prominently in the catalogue. There were some few articles exhibited which were the joint production of several workmen in the employ of certain firms, but in each of these cases the work was distinctly set forth (on a card appended to the article) to have been executed by John Stokes and Peter Noakes, etc., in the employment of such a firm — the names of the craftsmen always first, and the part each one took in the production of the articles, as thus :—Designed by J. Smith, carved by Thos. Evans, painted by J. Shaw, and so on—the great point the committee had in view being to bring out the name of the workman so that there could be no mistake in the matter, and in order that there might be no difficulty in anyone knowing how and where to find any individual workman. When the workman exhibited in his own name alone, his address was given. The result was that a great number of them were benefited thereby, some having offers of higher wages, others being advanced in various ways, others again receiving orders for copies of the articles exhibited, and in some cases orders were executed during the time the exhibition was open. Now here was a direct pecuniary benefit received at once by these workmen in consequence of the facilities afforded to the public for direct communication with the workmen; and, what is still more important, we have had abundant proof that the impetus given to the practice and improvement of the decorative arts in this district has been immense both in quantity and quality, inasmuch as for every five pounds spent in decoration at that time there is fifty pounds spent now. The good effect did not end there, for a spirit of emulation sprung up amongst the younger exhibitors, especially in the decorative trades, which we have good reason to know has had very important results. These facts point but to one conclusion, namely, that workmen's exhibitions, to be successful and to answer fully the ends for which they are established, must be carried out on similar principles to the one we are writing about. The workman-exhibitor must be made to feel and to see that it is for his benefit and for his advancement that the exhibition is got up, and that he will have fair play, and be placed on equal conditions with his fellow workmen; that he will not have to compete with capital; and that the employer shall be content for the time to keep in the background, leaving each workman to his own unaided efforts. He would then have some encouragement for exertion and self-denial, and would so exert himself. Only let him be once convinced that he will have a fair field and he requires no favour. Another mistake is also made in the conduct of these exhibitions in so far as the workman is almost ignored in the management. He should be consulted and have a voice in the matter; all conditions and arrangements should be submitted for his approval. As a rule, plain common sense will guide him to conclusions, and he knows best the wants and the peculiarities of his fellow-workmen, and is jealous of his rights and always ready to guard them strongly, so that it is folly to ignore him. These are apparently matters of little moment, but it is often in these little matters that success or failure lies.

As the result of considerable experience in the management of such an exhibition, and a long and intimate experience of working men, we are of opinion that all such exhibitions to be successful must be special and local—special as to trade or profession, and local as to district; and we would suggest that provision should be made in all large centres of industry for an annual exhibition of this kind, and that certain articles possessing extraordinary merit be selected from each exhibition to form a central exhibition in the metropolis, where special prizes and certificates would be given. By this means a really first-class workman would become widely known, and would have his talents and peculiar skill duly contrasted with others, and his value truly appraised, and thus would be opened out to the industrious and skilled artisan a wide field for his ambition—something to strive for—something to elevate him in the social scale and make him to respect himself, and as a natural consequence cause others to respect him. We are quite certain that until some such scheme is carried out these exhibitions will always be as they now are, huge advertising mediums.

◆

WHAT TO DO WITH THE THAMES EMBANKMENT.

ONE of the great problems of the future, we are told by the leading journal, will be the "rebuilding of our hideous metropolis," and no one can doubt that when the time shall come for the public mind to feel but half as much interest for art and architecture as for wars and tumults, it will become a matter of interest to find out at least how to *improve* London. To rebuild London would be a costly and a hard problem, and would involve a total change in the whole system as it now exists in art and architectural practice; but to improve it here and there, as opportunities offer, may be commenced at once, and without any very enormous outlay of capital or expenditure of brains. The House of Commons, by its late vote, has presented to Londoners a great chance of doing something in this direction, and we propose to offer a hint or two about it. The Thames Embankment is not to be built upon, even for the sake of Government offices or public museums, but it is to be laid out in some way or other as recreation grounds for the public, and to be made ornamental and pleasant to eye, and ear too, may be. How is this to be done? We confine ourselves to that portion of the Embankment which begins at Westminster Bridge, and ends, no one knows why, at Blackfriars Bridge, instead of going on to London Bridge, as would have seemed to be the natural termination of it. Nothing would seem to be more unfortunate than the way in which the Embankment has been contrived and arranged. Waterloo Bridge, to give but one single instance, is the best of the bridges, and terminates on either shore in a way not a little ingenious, and the problem surely was not to spoil this arrangement, but to terminate the line of the Embankment where the bridge itself ends, and bring up the wall of the Embankment flush with it, and thus to have left the whole of the bridge for a water-way, and to have constructed a new arch for the roadway of the Embankment, and so kept the river as *wide* as possible, and the architecture of the bridge, which is singularly good, complete. But we must take it as it is. What, therefore, we would suggest first, is that the awkward and solid parapet between the piers should be made to give place to an open iron railing, with a moderately broad elbow rail, so that the water of the river may be constantly in the view of those who pass along the pavement. As matters are now, no one can see the water without actually leaning over the parapet to look for it, and the way is thus reduced to an ordinary street dulness. Next, is not the pavement itself too broad for the traffic? It is a singular fact, hitherto unnoticed, that if you look at this traffic it will be found that it is but a rare chance that *two* people are found accidentally side by side and in a line with each other, so that as far as the mere traffic and crowd is concerned the pavement would be of sufficient width if but five feet wide, but say ten feet wide. Be it recollected that the whole of the picturesquenes about which there is so much talk in *old* towns is in the main due to the *narrowness* of the streets, and ways, and foot-pavements, and to the consequent thick grouping of the traffic through them. But we do not live in old or artistic days; the picturesque is confined to paper and art lecturings.

It was anticipated that a large omnibus, cab, and cart traffic would immediately commence on the opening of this new thoroughfare, but nothing of the kind seems to have taken place, probably for the simple reason that you must go out of your way for the mere purpose of driving down the Embankment roadway, and it would seem a pity that the whole of the Embankment roadway was not confined to *foot* passengers, and the quiet of the silent highway preserved. This would do away with the awkward and dismal wide road, and give the ground for trees and planting. What beauty there can be in a mere wide road like Portland-place, to give but one instance, void of traffic either of foot passengers or vehicles it would be difficult to tell. In the Thames Embankment it is seen in all its unsightly nakedness, and bareness, and uselessness.

Before we go further it is necessary to notice what has been done to the opposite side of this roadway. Walls bare enough, and some ten feet or more high, have been, as all know, built nearly from one end to the other, for the purpose of hiding and enclosing the gardens of the houses in Whitehall Gardens and of the Duke of Buccleugh's mansion, and others. Would it not be an improvement, now that no part of the ground is to be built upon, to substitute open iron railings like those in the Whitehall front of the Duke's mansion. Low, thick-leaved shrubs and ivy in the gardens would secure all the privacy that the ugly wall now does. Let us hope that the Templars will not wall in their gardens, but content themselves with what we have here suggested, or better still, if, liberally inclined, they leave their gardens open to the general way-faring public with the rest of the ground.

It should here be observed that the widest part of the Embankment, opposite the Adelphi-terrace, is four hundred feet wide, and that the average width from Somerset House to Blackfriars Bridge is some two hundred feet, so that there is ample space for a noble avenue of large trees and flower beds, or at least grass beds, from one end of the Embankment to the other; indeed, it would form, if not taken up in wide and utterly useless roadways, a small though narrow park, and nothing should be allowed to interfere with it for the mere sake of wharfage purposes, or the fancies of occupiers of private property.

Thus it will be seen that the whole of this piece of reclaimed ground from Westminster-bridge to Blackfriars, more than a mile in length and at least on an average two hundred feet wide, may be made into a pleasant garden, if not taken up by roadways and omnibus and van traffic, with a wide footway, though we would suggest not too wide, on the side of the river, and another footway next to the Whitehall mansions, the Adelphi-terrace, Somerset House, and the Temple Gardens, and—this would be our special suggestion—a noble avenue or double row of large trees on either side, from one end of the Embankment to the other; the spaces on either side between the footways and the row or rows of trees being planted with flowers, if possible, or grass. If of flowers, we might suggest that they be left to a little natural growth, and not treated in the way the unhappy flowers in Palace-yard are treated, and which it must cost the country some ten or more pounds per week to trim into artificial smartness. Flowers grow best and look best if left to nature and themselves. The unsightly Underground Railway-station, and cheap wooden piers, must of course remain, and the foolish Temple Garden archway, and the huge blocks of granite without any purpose or meaning, must all be left to fate and advertising posters, but it is to be hoped that some care will be taken of the beautiful little water gate, by Inigo Jones, now half buried at the bottom of Buckingham-street. Why not rebuild it on the edge of the Embankment, with a broad flight of steps down to the river by way of contrast to our improved modern way of work ? Through this archway you can go, but through the Temple archway before noted you cannot, for it seems to have been built only to be blocked up again. It is a beautiful bit of Renaissance architecture, and should be carefully looked to and taken down, and reconstructed stone by stone. Looking at this specimen of architecture done in days before there was or could be any architectural societies or classes for educating architects, it will hardly be said that we are improving in architecture. Contrast the Embankment architecture with it.

Let us note, by the way, another artistic matter not a little remarkable, all things considered, though it be but a small one. In the old Royal Academy days it would seem that the race of sculptors were somewhat different to what they are now, for when Sir William Chambers, the architect of Somerset House, wanted some good heads cut on key-stones, he did not get the work done by some raw apprentice, through the medium of a master contractor, but actually—it seems hardly believeable—applied at the door of the Royal Academy itself, of which he was a distinguished member—indeed, the original founder—and employed a sculptor of that body, Augustino Carlini, to do this humble work for him. All the heads on the key-stones over the doorways and windows of Somerset House are by this clever and able sculptor, Augustino Carlini ; and a specially good and characteristic one may now be seen on the key-stone of the large semi-circular arch or water-gate next the river. This fine head could hardly, without a good deal of trouble and dirty walking in river mud, be seen before the opening of the Embankment ; but now it may be easily looked at, and will be found to be a noble bit of workmanship and artistic skill. With all our schools and improved methods we had not the man among us who could "design" and cut on an ordinary key-stone of a common arch a characteristic head, so that there was nothing for it but to borrow or steal one ; and Carlini left behind him what has been deemed worth the taking, for this very head has been copied, as far as it was possible to do it, by the Thames Embankment architectural draughtsman, whoever he may have been at the moment, on the key-stone of the before mentioned Temple archway. It seems to me that great credit is due to the draughtsman who suggested this bit of borrowing from Somerset House. What would happen if a Royal Academician of our day were to be asked to carve a head on a key-stone, or other architectural member, it would be not a little dangerous to try to guess. Has the Academy *improved* since the days of Carlini ? This particular head is magnificently cut, and worth a journey down the dull, stupid Embankment to look at.

We have thus endeavoured to hint at one or two things which, among many others, would help to make this "water-way" better and pleasanter than it is at all likely to be as things now promise. To do full justice to it would take up more space than we can ask for ; but even this little may, it is hoped, help to show what may be done, and that without entailing any further expense than the simple conversion of the ground from a dull, wide, cheerless, unoccupied road into a garden, as far at least as in the present state of art seems possible.

C. B. A.

FRENCH SUBURBAN VILLAS*

THE subject which I have chosen for my paper this evening has been suggested by a very fine work entitled "Architecture Privée sous Napoleon III.," by Mons. César Daly, the eminent French architect. No branch of the architect's profession excites more interest amongst the public at large than the planning and desesigning of residences. For one person who would watch with interest the progress of a great public building, fifty would study the arrangements of a new house, and criticise minutely all its details. Everybody has a word to say here. The patron complains, after sternly limiting the cost, if he does not get everything in the way of accommodation which he has set his heart on ; the lady upbraids if her beau-ideal in the number of pantries and closets is not provided ; and even the servants take your name in vain for every smoky chimney and defective drain ; while for some of these matters the architect is as innocent as a babe unborn. Seeing that such is the case, it seriously behoves all architects who wish to achieve success in this department of our art to welcome every hint which may be derived from any source, and amongst others from a study of the houses of our continental friends.

The French houses of which I treat this evening are situated in the suburbs of Paris, and are the works of various architects. I am quite aware that the conditions which govern the designs of residences in France are different in many respects from what they are in England ; but making all due allowance for differences of climate and habit, I think there will still be much remaining that we may learn. In other branches of science and art we have been enriched to a very large extent by French example. There is scarcely anywhere a gentleman's house in this country which does not contain some article of furniture or *objet d'art* manufactured by or after a French designer, and in matters of fashion France rules the world ; but, strange to say, it has but slightly influenced English architecture. The bitter enmity which prevailed between the countries in former times no doubt explains the circumstance, as there was no disposition to receive anything favourably which emanated from a foe that we hated. That one great architect, Sir Christopher Wren, notwithstanding, derived his knowledge of the classical style from France is, I believe, a well-ascertained fact. In the present day we are happily on more cordial terms with our Gallic neighbours, and the Franch influence is beginning to be felt. We see it in our revived Gothic style, in the use of the French mansard roofs, in the revival of the Renaissance in such buildings, as the Foreign Office, and even in Liverpool in our new Exchange Buildings.

"Peace hath her victories as well as war," and it is matter of congratulation that our settled relations with the continent enable us to roam like bees over the fields of art, returning heavy laden to our industrial hive with treasure more glorious by far than any trophies of war.

Mons César Daly, in the work before us, divides his suburban villas into three classes—Première, Deuxième and Troisième.

The first example to which I wish to draw your attention is of the *premiere classe*, and is situated at St. Maur. The architect was M. Manguin. The first illustration gives a general view of the house and grounds, very beautifully delineated. The land is cleverly laid out and turned to the best account. At the left hand corner in front is the mansion, with its stables and outbuildings next to the road, and flanking a large courtyard or cour d'entrée. From this court, by a broad flight of steps, you can descend into the pleasure grounds. The portion of the ground on the right of the house is devoted to the green and hot-houses, which are ranged along the enclosure wall, having in front of them raised beds for flowers arranged symmetrically in the Italian manner. A broad walk stretches from the foot of the steps before mentioned, and is terminatedby a fountain. In the formation of the walks straight lines have been avoided as much as possible, which is particularly noticeable in the division of the kitchen garden, this being formed with a curve so as to work in with the rest. There is a good hint here for our English gardeners and architects, under whose hands the kitchen garden is generally an ugly square plot, with high brick walls, which mar the general effect of the laying out. If a symmetrical division of the garden into borders is necessary, it could be as well accomplished within a circle as a square, and in that shape would be much easier dealt with. In the illustration before us there is a stream of water flowing round the upper end of the grounds, with a smaller branch which intersects the land and makes the upper portion into an island. This is spanned by two ornamental bridges. In the centre of the island is a small chalet or summer-house. Where the walk around the island comes down to the water a balustrade is introduced, in order that views may be obtained up and down the stream. The arrangement of the house with the stables between it and the road is open to objection, as there is no separate access ; although by this means the opportunity is given for a fine architectural effect—the courtyard, with its buildings, preparing the eye for the more important structure in front. The house has rather a prison-like appearance from the road, being so completely shut in that only the upper portion can be seen.

The plan of the villa consists of an oblong block, with attached wings projecting slightly from the main body of the building. The arrangement of the apartments is simple and convenient. From the courtyard you enter into a spacious vestibule, which, continued on, forms a corridor right through to the garden entrance on the other side. On the right of this corridor are the grand and petit salons, communicating by folding doors, beyond which is the billiard-room, entered either from the large or small drawing-room. The conservatory or serre is erected at the side of the billiard-room, with which it communicates. It is a semi-oval in plan, and has a fountain placed in the centre of the curved side opposite to the billiard-room door. On each side of this door windows are placed to afford a view of the conservatory. Opening out of the grand salon, on the angle of the building, is a small boudoir contained within an octagon turret. The two salons are lit by pairs of large windows. The fireplace in the petit salon is placed under the windows. On the left of the vestibule is the grand staircase, and immediately behind the escalier de service, the remainder of the block being taken up by the salle à manger or dining-room, with an office at the angle. The garden entrance is made the most important of the two, with a spacious flight of steps leading down to the grounds, which are on a lower level than the court. Between the grand staircase and the salle à manger runs a corridor leading to the kitchen, which, with the larder and scullery, occupy the left wing of the house. There are two doors opening into the dining-room out of this corridor, so that the waiting can be accomplished with great ease. From the position of the sideboard recess it would appear that the table was intended to be placed with the head next to the window. This is contrary to what is the general practice, where the length of the table usually goes with the length of the room ; but here I think the architect is right, for first the light from the window is equally shared by all the guests at table, and ample room is left for the attendants. The proper position of the dining-room window is a point often overlooked, and I think you will agree with me as to the annoyance which we have all experienced when we have been sitting at a dinner table and have had to converse with a friend whose countenance we could not see, and whose whole appearance was like a portrait cut out of black paper, and unfortunately not always one of the best figures in the world.

The treads of the grand stairs are all curved, which not only gives additional ease in the ascent, but a beautiful play of lines. To the left of the kitchen is the house-yard with some outhouses, one of them being the lampisterie.

The stables, providing accommodation for five horses, are well-arranged. Opposite the stable door a loose box has been very well contrived, conveniently accessible to the yard without passing in front of the stalls. Above the stable there are apartments for the grooms.

The building on the right of the cour d'entree is occupied by the apartments of the concierge and a large play-room and school-room for *les enfants*. The idea of these rooms quite apart from the house is a very excellent one. Here the children, quiet and undisturbed by anything which occurs in the house, are more easily induced to give their whole attention to their studies, and in the play-room can shout or romp to their heart's content, or sallying from thence range in freedom over the beautiful grounds.

Ascending the grand staircase we arrive at the premier etage or first floor, in the centre of which is a spacious ante-chamber or landing. The two largest apartments are the chamber of the master and for guests, the small rooms in the angle turrets being dressing-rooms. The room between is the lady's boudoir, having a fireplace beneath the window, so that madame can sit before the fire or stove and have a beautiful view over the gardens. At the opposite end is a recess for the bed, to the left of which are double doors into the room, so as to keep it free from draught and private. A transverse corridor crosses the house from right to left, leading to the wings, and opening from that is the library, well placed for a studious man who, after burning the midnight oil far into the small hours, is not far off from

---

*By W. H. Picton, A.R.I.B.A. Read before the Liverpool Architectural Society.

> That heaven on earth to the weary head.

The larger bedrooms in the wings are the children's rooms.

In the floor above two large rooms are obtained for guests, and two smaller ones for servants, with dressing closets, and a large room for storing linen.

In the design of the exterior the chief pains have been bestowed upon the garden front. The style is quite eclectic in character, but thoroughly French. The architect has not shown the least anxiety to keep his work in strict accordance with any given style. Valuable hints have been derived from both the Classic and the Gothic, but he is nowhere a slave to either. I do not think the general grouping is particularly happy. The enormous roof somewhat oppresses the façade, and the turrets being so very nearly detached, and in design varying considerably from the rest, have a discordant effect, and are to the house like lukewarm friends, "neither off nor on." The detached chimney-stalks have a very weak effect, jutting up as they do from the cornice and not indicated in any way below. Amongst the many hints derived from the Gothic, it is strange the architect did not think of expressing them more distinctly. These drawbacks apart, there is very considerable merit in the design, and now for what is excellent about it. It will be seen that the wings have buttresses at the angles, starting under the string course, and carried down with one set-off only to the ground. I can see no reason whatever why our Gothic friends should monopolise this useful feature. In this case it gives stability to the corner of the wing, and also widens out the side of the building to receive the conservatory, to which it also gives a finish. Looking generally over the front, it will be seen that while the pediments over the centre and turret windows, the main cornice and round-arched windows are Italian in style, the coupled windows, the dormers in the centre of front, and the splays above the strings, and many of the mouldings, are perfectly Gothic in feeling. On the whole, I submit that the fusion has not been unsuccessful. Our French brethren display more courage than we in the architectural struggle after beauty. Why is this? It is certainly not because they do not understand the styles in their purity, for no nation in Europe has produced finer examples of representative buildings in all the known types of the art. It is not that they are careless about harmony in such matters, and do not care how heterogeneous the elements are which they heap together, providing only they create an effect; for all the details of their buildings show the most careful and scrupulous study, which will stand the test of minute examination. I suspect that there is a deeper and better cause than either of the above. I believe that their art education has been carried to such a high pitch that they have become thoroughly grounded in the principles of beauty, and having reached a higher level in the art they breathe more freely the liberal air. They refuse any longer to be tyrannised over by any style, and their art for them

> Has centre everywhere,
> Nor cares to fix itself to form.

(*To be concluded next week.*)

◆

CEMENTS.

At the last meeting of the Liverpool Architectural Society Mr. Boult stated that at the time the several cements were tested at Seacombe, as reported by him to the society on the 12th January last, Messrs. Haigh and Co. had obtained from the Liverpool Cement Company a cask of cement then lying in bulk in the works. This they had tested themselves with the following results, in comparison with the cement of Messrs. J. B. White Brothers, as reported to him in a note dated 23rd inst.:—

The test specimens were made up on January 18th, and they were tested 22nd February; they consisted of four specimens of each kind of cement, two of which, A and B, were half sand and half cement, the specimens A being air-dried and B wet; the others, C and D, were of neat cement, the first air-dried, the second wet. The specimens were cast as in the Government tests.

1A	J. B. White Brothers	torn with	538lb.
2A	Liverpool Cement Co.	„	568 „
1B	J. B. White Brothers	„	448 „
2B	Liverpool Cement Co.	„	818 „
1C	J. B. White Brothers	„	688 „
2C	Liverpool Cement Co.	„	758 „
1D	J. B. White Brothers	„	518 „
2D	Liverpool Cement Co.	„	828 „

Mr. Boult was of opinion that it was impossible to place confidence in any cement without testing every barrel.

◆

THE KITCHEN RANGE.

(*Concluded from page* 30.)

In the concluding paragraph of our previous article we referred to the unpleasant smells that too often arise from the kitchen during the process of cooking, and proposed to trace the origin of that inconvenience, and, if possible, to point out a remedy.

The cause, then, of this annoyance is an absence of any proper regulation of the currents of air through the kitchen, or, in other words, defective ventilation. The chimney being, as we have already stated, to some extent intended as a means of ventilation, if it do not carry off all the fumes arising from the combustion of fuel, as well as, in the case of a kitchen range, all the vapours consequent upon cooking, there must be something wrong in its arrangement or form. Let us for a moment trace the air currents of a room. By an old experiment of applying a lighted paper to the edge of a room door when it is closed, or partially so, it will be found, by the direction given to the flame, that there is constantly an inward current of air at the lower part of the door, and an outward current at the top. This arises from the fact that, heated air being lighter than cold air, it rises to the top of the room, and, escaping through the cavity between the upper part of the door and the door frame, its place is supplied by a current of cooler air, which being heavier, enters from below. This lower current will be found to be much more powerful when there is a fire in the room, as then, besides supplying the air necessary to replace the escaping heated atmosphere, a considerable additional quantity is required to support the combustion of fuel in the grate, and the air thus supplied escapes up the chimney; whereas when there is no fire there is a downward current in the chimney itself, which assists in supplying fresh air to the room. Bearing this principle of ventilation in mind, let us now trace the course of those vapours, or smells, which at times escape from the kitchen into the other apartments whilst cooking is going on. In the first place were the ventilation of the kitchen perfect, all these fumes would escape up the chimney; but, in the absence of proper arrangements for this purpose, a portion of them escape into the kitchen, in the first place, and, rising with the heated vapours of the apartment, ascend until they fill the entire space between the ceiling and the top of the doors; and it will be found by practical test that whilst the lower part of the room is almost free from smell, the upper stratum of air is strongly impregnated with the odours arising from cooking. If the top of the door leading into the outer air be above that of the inner door, a certain portion of these will escape into the atmosphere; but, as both doors are usually of the same height, they will by preference escape over the inner door, and so get into the other part of the house. This arises from the fact that the house itself acts as a huge chimney to the lower apartments, and the outer current of air is consequently stronger in the direction of the house than towards the atmosphere. The fumes, therefore, which are unable to ascend the chimney will escape into the house, and be carried by the ascending atmosphere into the passages and rooms on the lower floors above. It may, however, not unreasonably be asked why under these conditions the smell is not strongest in the top storey rather than on the floor immediately above the kitchen? A moment's reflection will explain this. If the heated air thus impregnated retained its initial temperature, we should undoubtedly find it most conspicuous on the topmost floor; but meeting, as it rises, with cooler currents, it not only becomes condensed, and so freed to a certain extent from its impurities, but by the admixture of a larger quantity of air the impurities become diluted; and, ultimately, as the air rises, all sense of their existence becomes lost.

There can be no doubt that the inconvenience to which we are referring exists to a much greater extent where the American kitcheners are employed than with an open range, in consequence of the draughts of combustion being conveyed up close flues; whilst a small register only furnishes the means of escape for the other vapours, and through which the draught is not sufficiently strong to carry them off. For this reason close-topped ranges are more likely to be offensive than those with open fires; but for convenience of cooking, the former are certainly more advantageous, in consequence of the whole top of the range being a hot-plate. A combination of the close and open range, such as is now being fitted to the Grosvenor Mansions, in Westminster, and which are manufactured by Messrs. Herring and Son, of Chertsey, whilst they possess, to some extent, the convenience of the hot-plate, do not obstruct the proper current of draught up the chimney, and are, therefore, not to the same extent liable to the defects of which we have been speaking.

In making these remarks we desire especially to avoid giving any opinion decidedly adverse to close ranges. We have known them to act admirably, and to be free from the causes of complaint to which we are referring. From what we have already said it will be understood that the smell of cooking in a house arises, not generally in consequence of a defective stove, but from a faulty chimney, or the bad setting of a stove.

It would be impossible to lay down any golden rule for the avoidance of the inconvenience, as each case must depend upon local circumstances. Every builder or professed chimney doctor will have his own remedy, consisting, probably, of some patent in which he is personally interested; but whilst all may be good under certain circumstances, each one will probably be found to fail in nine cases out of ten. The only scientific way of getting over the difficulty is either to increase the draught of the chimney through the orifice up which the fumes of cooking should ascend; or else to draw those fumes off from the upper stratum of air in the kitchen, as near the ceiling as may be convenient, either by means of a ventilator in the chimney, or by one communicating with the outer air from some part in the wall, as high as possible above the top of the kitchen door.

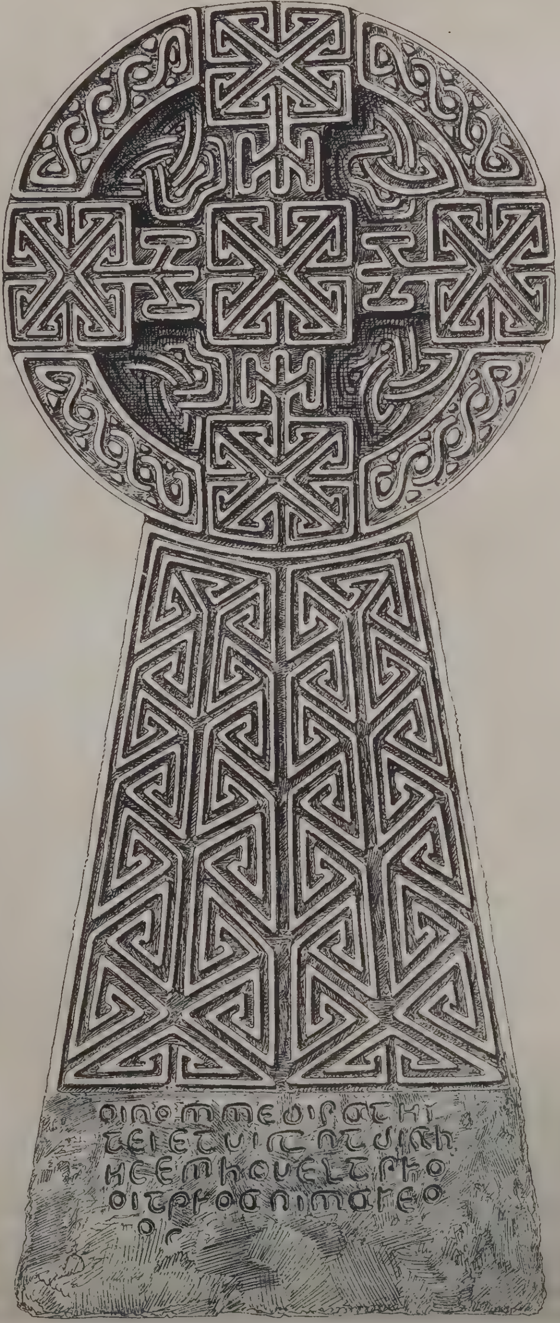
A simple yet effectual way of accomplishing the former object is by contracting the orifice of the register where necessary, and decreasing the open space round the front of the range, thus inducing a stronger current from the kitchen up the flue. This is quite practicable with a kitchen range, although it could not be applied as a remedy for any evils attendant on the fireplace of a sitting or sleeping apartment, because one of the consequences would necessarily be the shutting out of a portion of the heat of the fire from the room. This, in the case of a kitchen, would be no immediate drawback, as the fire would still be equally available for culinary purposes; but, under circumstances where the fire is merely required to heat an apartment, any contraction of the chimney-piece front would tend immediately to detract from the very benefits the fire was designed to contribute. Taking off the heated stratum of air from the upper surface of the room in the manner above suggested is but a modification of Dr. Arnott's system of ventilation, which is too well known to require any dissertation here.—F. C. Danvers, in the *Food Journal.*

◆

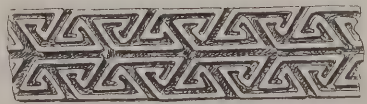
BUILDING NEWS SKETCH BOOK.

XXXVIII.—ANCIENT CROSS.

I FORWARD you per book post an etching of a very ancient cross in Llantwit Major Church, Glamorganshire, for the Building News Sketch Book. The cross is 6ft. high, and the diameter of the top 2ft. 6in. The carved ornaments on it speak for themselves, being of the same description as the beautiful twisted knots to be found on the Irish monuments of the same date (800 to 1100). I do not think any drawing of this most interesting stone has as yet been published, and certainly no photos have been taken. J. Romilly Allen.

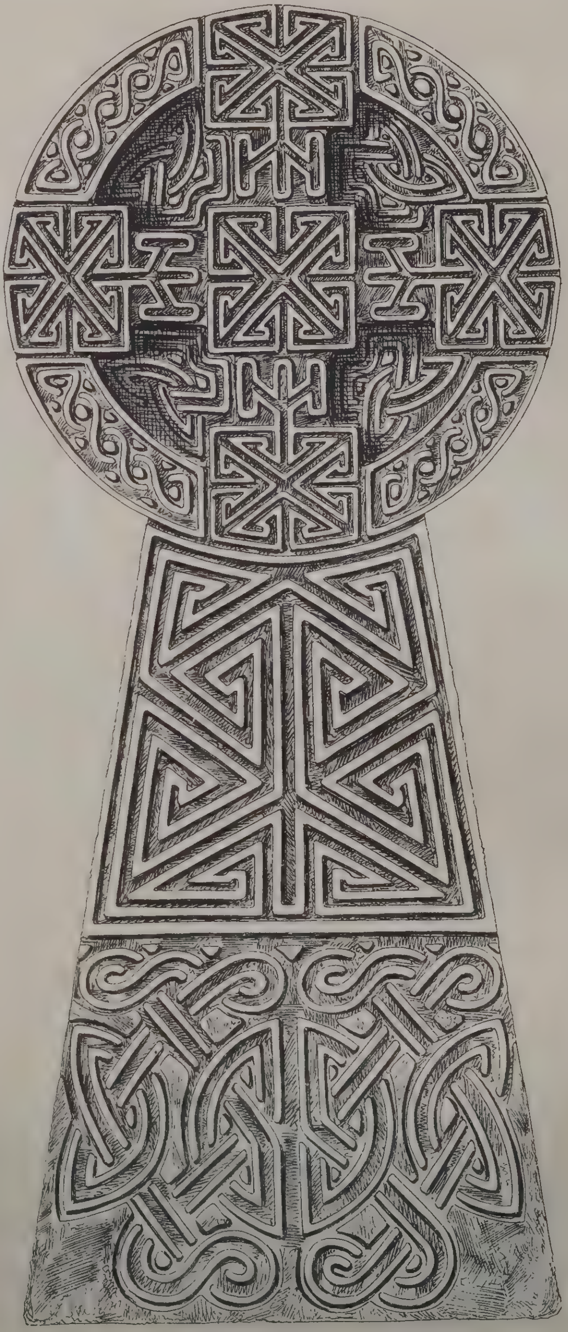


FRONT



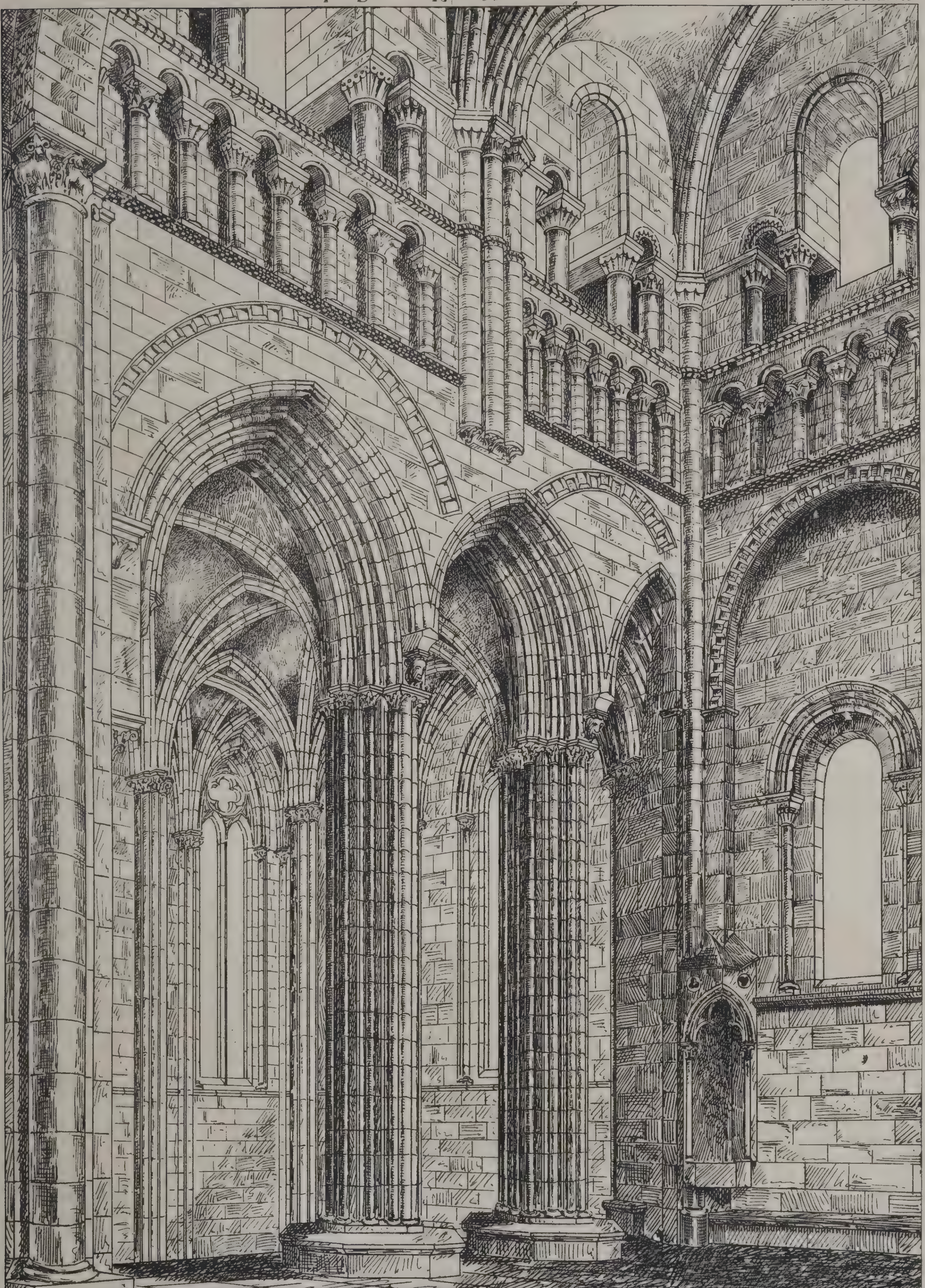
Ornament on side

SKETCH OF CROSS
LANTWIT CHURCH
BY J.R.ALLEN.



BACK

Photo-lithographed by Whiteman & Bass London



L'Abbaye:aux:Dames:Caen:So Transept

Photo-Lithographed by Whiteman & Bass London

Furniture & Decoration.

THE THEORY AND PRACTICE OF MODERN HOUSE PAINTING AND DECORATION.

By AN EXPERIENCED WORKMAN.

PREPARATORY PROCESSES.

(Continued from page 101.)

THE first coat of paint on walls should in almost all cases be mixed with white lead and linseed oil alone, in the proportion of about four pounds of lead to one pint of oil. The exceptions to the above rule are rare, and consist of such works as are finished very smoothly and trowelled to a fine hard surface with Keene's or other fine cement. In these cases the surface is hard, and of course nonabsorbent, like glass, and if the ordinary oil paint is laid on it, it remains upon the surface and does not sink into the body of the cement, as it does on common plaster work or Portland or Roman cement; and unless great care is used the paint will skin over, and thus make a rough face, and one very liable to be scratched off with the slightest touch. Consequently, the first coat of paint on these hard cements should be mixed about half-and-half, that is in equal portions of linseed oil and turpentine, with about five pounds of lead to a pint of thinners, and in laying the paint on the work it should be rubbed as bare as possible. It will be found much better and safer to go to the extra trouble of giving the work one or two extra coats of paint than to lay on too much stuff at one time; and two days at the least should always intervene between each coat, except in finishing with flatting or dead colour, which should be done on the next day, as we thereby get a key in the coat of oil paint which will bind the flat colour, which has very little binding power in itself. If too much paint is laid on the work scarcely ever gets hard, and cannot be rubbed down, but skins over the surface and of course keeps soft underneath. The second coat should be mixed with two-thirds oil to one of turpentine; third coat, two-thirds turpentine to one of oil. Thus we get a firm, hard, and tenacious body of paint, without any tendency to reeve, crinkle, soften, or peel. The ordinary plastered walls have a porosity and power of absorption quite different to the cement we have been describing, and consequently the paint used for the first coat on such walls should be oil colour exclusively, and may be mixed in the following proportions, namely, one pint of linseed oil to four pounds of white lead, and stained with a little Indian red or Venetian red. We prefer the first or primary coat, either on walls or woodwork, stained red—in the first place because warm red tints cover better, and sooner bring the work to one uniform tint than either cold or even umber tints; and secondly, because whatever tint of colour the work may afterwards be finished, the red in the first coat warms and mellows all the subsequent coats; and here we may note the fact that, in painting, almost all colours are improved by a groundwork of red or reddish tone of colour. Blacks, blues, greens, and yellows are improved in tone treated in this manner. It will, of course, be understood that there must afterwards be a sufficient body of colour, either green or blue, to cover the red, and that the red must be in strength or depth of tone proportioned to the strength of the tints of the finishing colour. For instance, if we want a rich black we should paint the ground with Indian red or chocolate colour; one coat of drop black would cover and suffice, and we should thus get a better black than if the ground colour had been lead colour, which is the general mode. But in painting a wall or door which had to be finished in light tints of party colours, we should only stain the first coat of priming of sufficient depth to answer the end in view, namely, to warm and mellow the successive coats of paint, for it is a fact that if we paint a groundwork of any strong colour, and afterwards paint the same over with four, five, or six coats of light tints of colour, that all these coats of paint will be influenced more or less by the first ground colour, and the finishing tint will partake, to some extent, of its tone. We find in practice that if common outside window sashes, which are being repainted, dirty and black as they are generally in our huge towns—if they are to be painted with two coats of white, that the second or finishing coat will cover better and be much whiter if the first coat is stained with red. The red seems to have a power of destroying or killing the black dirt which no other colour possesses. Now if these sashes are painted with two coats of white, the first of it, being without red, is of a dirty leaden hue, which affects the second coat. It will be said that the same effect may be gained in finishing the work in tints if we add red to the last coat. It is true that the colour may be modified in this manner, but not without sacrificing the purity of some tints; whereas in the former case we obtain the warmth and purity of tone as well.

In giving the proportions of white lead to oil in the mixing of paints for various purposes, both here and in other parts of our subject, it must be thoroughly understood that, although they will be found to be strictly correct, being established by years of experience, the proportions named only refer to the best white lead and oil; for, as we have before pointed out in our article on white leads, white lead is so much adulterated that it would not be possible to lay down any laws or proportions which would be applicable to all, and, in any case, some little latitude must be allowed, because even the best leads differ in solidity according to age, new lead not requiring so much oil in mixing it into paint as old lead does, its density being considerably less. When the colour is mixed, it should be properly strained through either fine muslin or finely-perforated metal strainers. These latter do not answer the purpose as well as they should, because they will, of course, allow all particles of grit to pass through the perforations which are not too large, also particles of lead. In straining the paint, we have two objects in view, namely, to thoroughly mix and amalgamate the lead and oil, and, secondly, to intercept all grit, skins, and foreign matter which may be in the colour; and we find in practice that this is best effected either by using two or three folds of fine muslin or a strainer made of the finest gauze wire. Much will, of course, depend on the fineness or coarseness of the lead or colours used. Much of the common lead, and many of the common colours, are so coarsely ground, and have so much sand and other abominations mixed with them, to make them weigh heavy, that it is impossible to make smooth work with them, however carefully the paint is strained. But with good and well-ground pigments, carefully mixed and strained, there will be no difficulty in getting up smooth work. Great care should also be taken with brushes to see that they are perfectly clean and free from nitts, dirt, and grit. The keeping of brushes clean and in working order is one of the greatest difficulties the painter has to contend with; men are careless, and don't take the trouble to prevent the brushes getting foul. Many plans are tried with varying success. While brushes are being used daily on a job, they take no harm in being placed in water in a clean kettle or tub, and, with sufficient water to just cover the bristles, they will be in working order next morning. In using brushes, whether for paint or varnish, there are several conditions requisite to preserve them in good working order, the principal of which are, first, care in working, so that the brush shall work evenly, and with the ends of the hair uniform in length and square. This can only be accomplished by using the brush lightly, without much pressure. A common fault with many painters is to exert too much pressure on the sides of the brush when working, thus wearing it away on two sides and leaving it hollow in the middle, making it an impossibility to lay off the work without shewing the marks or streaks of the brush. In fact, a poor workman will give himself a large amount of extra trouble, or, rather, harder work than there is any necessity for, and not do the work half as easily or half as well as the good workman. This fault is the cause of that streakiness we so often see in painted work. The second qualification for a good brush is cleanliness, which can only be obtained and kept by carefulness in working. A good workman will have his brushes clean in the handle, and free from paint on the stock and on the bridleing, and will take care that the paint is well scraped from the roots of the hair before he puts it away when done done with it for a time; but the careless workman allows the paint to accumulate at the roots of his bristles, and on the stock and handle of the brush, where it dries, and when he is working with it the dry paint breaks up by the motion produced in working, and so gets on to his work, fills it with nitts, and, of course, makes bad and rough work. He is liable also, with a brush in this state, to get the lead on his hands and under his nails, thus bringing on colic, &c., &c.—for it may be set down as a rule that the workman who is careless and dirty in the use of his tools will be not over cleanly or careful of his person. On the other hand, a good and careful workman may use the paint brush a whole day without soiling his hands—which fact, in many cases, just makes the difference between health and disease amongst house-painters. The next, and, in fact, one of the principal requisites for preserving a brush in working order is the indispensable necessity of having some means of keeping them right when put away for a time. Ordinarily, this is done by simply placing the brushes in the brush-tub, with very little care or attention, and if they should not be required for use for any considerable time the bristles become bent and turned up at the points, and often twisted or warped in their whole length, and so become useless; or the tub may not have enough water in it to cover the roots of the hair, and the consequence is the paint on them becomes dry, and the brush becomes foul and nitty; or there may be too much water in the tub, not only covering the bristles but the stock also; and the result is that the stock swells, the wrapping becomes rotten, and the brush bursts, and thus it is ruined. A good plan to adopt with brushes which are constantly in use is to have a zinc cistern made, of any convenient size, according to the number of brushes required to be kept in it. An oblong is the best form; its depth should be not less than 10in. The lid must be made of zinc, strengthened with strong bars of zinc, and perforated with oval and round holes just of sufficient size to allow one brush to be placed in each, so that it shall be held without falling through. The cistern may then always be kept full of water without danger of injuring the brushes. The lid should be so arranged that the brushes shall enter the water only so far as just to cover the bristles; thus suspended they will not touch the bottom of the cistern, and so will escape injury. Brushes which are used for varnishing require to be treated in a different manner to the common paint brush, inasmuch as water is totally unsuited to keep them in, because water causes the varnish remaining in the brush after being used to become fat—that is, thick and leathery—and turns it white, and it becomes nitty. Varnish brushes require considerably more care bestowed upon them than they get, as a rule; and the best varnish may be, and, in fact, often is, spoiled by using a foul or dirty brush.

A writer in a recent number of the "Scientific American" recommends varnish brushes to be kept in slow-drying varnish when out of use. This plan may answer if the said brushes are being used day after day consecutively, which is rarely the case except in toy-shops and japanner's workshops; but its fallacy, as applied to the house-painters' varnish brushes, will be evident at once if we consider that the varnish brushes have to be put away a week or a fortnight at a time, and sometimes much longer; and even the slowest of slow-drying varnishes will skin over and dry long before that time, and consequently the brushes get foul. If the brushes are to be kept in this manner we prefer that linseed oil should be used instead of slow-drying varnish. The brush should be cleared from the varnish as much as possible, either by rubbing out or scraping over a palette knife. The brush should then be placed in a tin can, with a zinc or wooden lid, of a similar construction to the one described above; but we prefer them only of sufficient capacity to contain one or two brushes, being much easier kept clean and the oil removed. The oil should fill the tin, and the brush should be suspended so that the hairs do not touch the bottom. These various plans are generally adopted for convenience and to save time; but we have invariably found in practice that decidedly the best plan to preserve a varnish brush clean and free from nitts is to wash it out—that is if it is not going to be used for a few days. We recommend that it be first rinsed out with turps, and then thoroughly washed out with soap and hot water. With a little care and attention every particle of varnish may be removed from the roots of the bristles, and the brush put away perfectly clean and ready for the next job. There is no other method known to us (after a large experience) whereby varnish brushes can be kept free from nitts and in first-rate working order.

(*To be continued.*)

ART EDUCATION IN THE UNITED KINGDOM.

THE following extract of a minute issued on August 6th gives the relative position in successful work of the Schools of Art in the kingdom. There are now above one hundred schools of art, exclusive of drawing classes, in various institutions, which are taught by teachers holding lower certificates than those of Art Masters.

The minute of 3rd January, 1868, offered prizes to the head Masters of Schools of Art in which the general amount of work, as tested by examinations, considered with reference to the number of students under instruction, was most satisfactory. In accordance with the principles laid down by the minute of the 19th February, 1868, and having regard to the number or students taught in each school, the following prizes have been awarded by the Lords of the Committee of Council on Education:—

	£
J. S. Rawle, Nottingham	50
Louisa Gann, Bloomsbury	40
W. H. Sounes, Sheffield	40
J. Sparkes, Lambeth	40
W. J. Muckley, Manchester	30
C. D. Hodder, Edinbro' (male)	30
E. R. Taylor, Lincoln	30
D. W. Raimbach, Birmingham	30
W. C. Way, Newcastle-on-Tyne	30
John Parker, S. Thomas' Charterhouse	20
R. Greenlees, Glasgow	20
Walter Smith, Bradford	29
W. H. Stopford, Halifax	20
Edwin Lyne, Dublin	20
G. Stewart, West London	20
H. Lees, Carlisle	20
Susan A. Asworth, Edinburgh (female)	20
J. P. Bacon, Stoke on-Trent	20
J. C. Thompson, Warrington	20
J. Carter, Hanley	10
Walter Smith, Leeds (South parade)	10
W. L. Casey, S. Martin's, Long Acre	10
J. N. Smith, Bristol	10
G. Theaker, Burslem	10
J. Menzies, Aberdeen	10
R. Cochrane, Norwich	10
J. Bently, Birkenhead	10
J. Anderson, Coventry	10
Walter Smith, Wakefield	10
J. E. Goepel, Frome	10
J. P. Bacon, Newcastle-under-Lyne	10
D. Jones, Dudley	10
H. Woolner, Coalbrookdale	10
A. Macdonald, Oxford	10
S. Thomas, Sunderland	10
C. Swinstead, North London	10
J. S. Dorning, Great Yarmouth	10
S. F. Mills, Spitalfields	10
W. Stewart, Paisley	10

◆

We hear that Sir W. A. Fraser, Bart., M.A., F.A.S., late M.P. for Barnstaple, is a candidate for the vacant office of the Chairman of the Board of Works.

ROYAL ARCHÆOLOGICAL INSTITUTE OF GREAT BRITAIN AND IRELAND AT LEICESTER.

(*Concluded from page* 95.)

ON Thursday week upwards of sixty of the members and friends of the society started in a special train for Ashby-de-la-Zouch, Tamworth, and Tutbury. At Ashby, the first halting place, the party visited the interesting and picturesque ruins of the castle. Mr. Parker, although it was his first sight of the ruins, explained the different buildings remaining, and after some observations from Mr. Clarke, the party walked on to the old church, where Mr. Bloxam drew their attention to a very remarkable effigy in the north aisle. It is a monument of a person evidently of high rank, and there is not, he said, another like it in England. The figure wears the "S.S." collar, and from other evidences the deceased had doubtless been on a pilgrimage. They next inspected the monuments in the chancel erected to the memory of Theophilus, Earl of Huntingdon, and his Countess. Mr. Bloxam pointed out the barb or gorget covering the chin of the Countess, which denoted that she was a widow. It was more complete than any he had ever seen. The Mayor's converazione was held in the evening at the Town Museum.

On Friday, a meeting of the members of the Institute was held at an early hour, for the purpose of deciding some routine matter, and among other things of fixing the place of meeting for next year. This meeting was private, but the place was not finally fixed. The Historical Section afterwards met, under the presidency of Lord Talbot de Malahide. Three papers were set down for discussion. 1. Paper by the Rev. Dr. Margoliouth: "Gleanings of Historic Anglo-Hebrew from the Annals of Ancient Mercia." 2. Professor Lewis: "Remarks on Coins recently found at Sutton, near Woodbridge." 3. Mr. H. F. Holt: "The Parliament of Henry V. at Leicester in 1414." There was a fourth paper by Mr. Lee Warner, on Wycliffe (who was a Leicestershire worthy), and in the short discussion which followed, Mr. Bloxam declared that all the portraits that had been published of Wycliffe were imaginary, and that a patchwork garment shown as his gown was of a later date; moreover, that Wycliffe, who is always represented with a beard, was always clean shaven. The meeting then broke up, and at half-past two a large party proceeded in carriages to Kirby Muxloe Castle. The edifice is built of brick, with sandstone facings, mullions, copings, &c. It is generally supposed that it was built about the year 1475, by Sir William, afterwards Lord, Hastings. It was formerly encompassed by a moat, enclosing an oblong space of nearly two acres. A gateway, flanked by two semi-octagonal towers, conducted into the court-yards, and tradition reports that the castle was for some time a place of refuge for Jane Shore. On each side of the entrance passage were vaulted rooms, formerly used by the porters. Mr. Bloxam, in the absence of Mr. Clarke, F.S.A., explained the character of the ruins, remarking that it was forty years since he had visited the locality. One of the towers which now alone remains on the south-west side, was then examined. It contained three principal rooms, one over the other, each supplied with a fire-place and chimney. The lower one, perhaps, served as a hall or guard room for the servants, the one over it as the lord's hall or principal living-room, and the uppermost as his "solar" or sleeping-room. The party, at the invitation of Mr. J. Bennett, one of the Town Councillors of the borough, who has a residence at Kirby, visited his house, and afterwards returned to Leicester, where a soirée was held in the evening at the Town Museum.

On Saturday, a somewhat lengthened excursion was made. The members left Leicester at nine a.m. for Groby Castle, Bradgate Park, Ulverscroft Priory, Woodhouse Chapel, Beaumanor, and Gracedieu, returning thence (from Coalville station) by railway train due at Leicester at 7.40 p.m. The whole of the journey out was performed by road, and the Rev. E. Hill, who undertook the conductorship of the excursion, planned the arrangements admirably. The journey altogether was over 30 miles through the most picturesque portion of the county of Leicester. The first halt was made at Groby Castle and Mound, where Mr. Bloxam made some pertinent remarks respecting the mound there situated. An old volume in the Temporary Museum at Leicester, bearing the title of "The Description of Leicestershire, containing manners of antiquitye, historye, armorye, and geniology. By William Burton, Esq." (1622), says of Groby:—"There was an ancient castle whose wals (as I finde in old record) were beaten down by commandment of King H. 2. There had been also a very faire and ancient chappell, but all those goodly buildings are now ruinated and gone." Mr. Bloxam said an old tradition asserted that a subterranean passage once led from this mound to Ulverscroft Priory and Leicester Abbey.

From Groby Castle the party proceeded to Bradgate Park. The ruins were inspected, and also the domestic chapel. Mr. Bloxam gave some interesting particulars respecting the exterior of the building, remarking that it was formerly a seat of the Lords Grey of Groby. It was built in the early part of the sixteenth century by Thomas, Lord Grey, second Marquis of Dorset, and was occupied by his descendants as their chief seat until the beginning of the last century, when it was destroyed by fire. The ruins at present consist of two towers, one square and the other an irregular polygon. On the north side was the great hall, the remains of which are now luxuriantly mantled with ivy. The foundations of the buildings are still visible, and at the south-east corner are the remains of an octagonal tower. The area near to the chapel was formerly the garden. The chapel was next visited, and the monument erected to Lord Henry Grey and his lady was examined with great interest. Mr. Bloxam observed, in connection with this building, that it undoubtedly formed part of the original chapel to the hall, but about twenty years ago it was used as a farm shed. The build- was now, however, taken care of. Great interest was attached to the locality, owing to its having been the birth-place of the celebrated and unfortunate Lady Jane Grey, who spent here the earliest and happiest of her years. Mr. Reeves, the park-keeper, pointed out two oak trees supposed to have been planted by Lady Jane Grey and Lord Dudley; also a mulberry tree supposed to have been planted by the former.

The next place visited was Ulverscroft Priory. Here every facility was offered by the tenant, Mr. Thirlby, to view the ruins. A very interesting description of the old Priory was given by Mr. Bloxam. The Priory, it was stated, was founded in 1130 by Robert Bossu, Earl of Leicester, for Eremites of the Order of St. Augustine. It was refounded by Henry VIII. in 1537, but was dissolved in 1539. A very minute inspection was made of the church, tower, and priory house, and a curious tile, taken from the church, was also pointed out in Mr. Thirlby's kitchen, representing one of the signs of the Zodiac—the sun in Aries.

Woodhouse Chapel was next examined. Mr. J. Gough Nicholls gave an explanation of one or two painted windows in the chapel. He stated that the original building was founded in 1338, and that it was rebuilt in the time of Henry VI., when the windows were filled in with the beautiful stained glass, mainly coats of arms, by Lord Henry Beaumont. The party then proceeded to Beaumanor, arriving about two o'clock. They were received by Mr. and Mrs. Herrick and Miss Herrick, and hospitably entertained. After an entire examination of the house and grounds, the party drove through Loughborough to Gracedieu. The chapel was inspected, also the ruins, which were fully described by Mr. J. Thompson. This ancient Priory was founded by Roisi de Verdon, widow of Lord Verdon, in 1240. Coalville was then made for, whence the excursionists left by special train for Leicester, which they reached shortly before eight o'clock.

On Monday morning the Historical Section met in the lecture room at the Town Museum. Mr. Carthew occupied the chair, and in the absence of the Rev. Assheton Pownall, the Rev. J. Spittal read a paper prepared by the former gentleman, on the recent find of Roman coin in Leicestershire. Two other papers were down for reading—one by the Rev. J. H. Hill on the Earls of Rutland, and another on a portion of the history of his parish by a Leicestershire rector, but neither the papers nor the authors being forthcoming, the limited audience present were conducted over the Museum by Mr. Weatherhead, the curator, who gave some interesting details in reference to the ancient coins to be found in that institution. A party of about thirty in number started by the 12.50 train for Melton Mowbray, where the beauties of the church were pointed out by Mr Wing. The church, dedicated to S. Mary, is spacious lofty building, with a handsome tower, partly in the Early English style. At the west end is a very peculiar entrance porch, with an elegant doorway, having two niches on each side and two ornamental windows. The church was built most probably in the year 1350, and was considerably improved in the reign of Queen Elizabeth by the addition of the clerestory, the continuous lights and moulding of which have a fine effect. The east window, which was given by the late Robert Day, of Wymondham, represents the parables of the Good Samaritan, the Prodigal Son, the Sower, the Pearl, the Pharisees, and the Publican, &c. The present restoration of the church is progressing most satisfactorily. The excursionists then went to Oakham by road, carriages and pairs having been provided for them. They visited the very handsome Gothic church of All Saints', and the ancient castle, which is supposed to have been built soon after the Norman Conquest by Wakelin de Ferrars. After a pleasant day the party returned to Leicester by the 5.40 train. In the evening a *conversazione* was held in the temporary museum. There was but a spare attendance.

The concluding meeting took place on Tuesday in the Town-hall, a hearty vote of thanks being tendered to the Mayor of Leicester, the Leicestershire Architectural Society, the Literary and Philosophical Society, the Freemasons of the Provinces, and the Archæological Society for their reception of the Institution and the facilities placed at their disposal by the use of the Guildhall, the Town Library, and the Lecture Room, and to all those who had hospitably entertained the members of the Institute.

The temporary museum, the contents of which were admitably arranged by Mr. Tucker, deserves notice. Among them, the visitors' attention was principally diverted to the silver *repousse* plate, exhibited by Mr. Nevinson; the knight's armour, the thumb-ring found in the castle, &c., by Mr. Kelly; a curious little Roman tripod, by Mr. North; the Corporation seal and the silver badge of the town waits (temp. Eliz.); a very large Saxon fibula, by Sir F. G. Fowke, Mr. Freen, and Mr. Knight, joint lords of the manor in which it was discovered; the large collection of books upon local history, from the town library, and others lent by Mr. Thompson, Mr. Sarcen, &c.; the detail drawings of the very ancient Wyggeston Hospital, by Mr. Paget—which singular edifice, it is to be hoped, may be preserved intact, or otherwise at least saved from utter destruction by its careful transformation into some useful public building as has been well sketched by that admirable architect Mr. Goddard; the Saxon swords and other articles from Melton Mowbray, by Mr. Fetch, and which we are pleased to hear will be left behind in the town museum; the extensive series of portraits lent by the Earl of Denbigh, Mr. W. Perry Herrick, the Corporation, and Mrs. Cooke; the extensive collection of Roman relics and the enamels shown by Mr. Goddard; the smaller silver mace formerly belonging to the town, but purchased by Mr. Nevinson when the outburst of anti-corporate temper in 1836 led the local political reformers to dispose of plate, pictures, official robes, and gilded baubles, and which, after now thirty-four years of separation, has reposed once more beside the grand mace which to-day is again the symbol of power for the chief magistrate, having been repurchased by subscription some two or three years ago. The most remarkable of Mediæval articles is the embroidered vestment of English work not later than A.D. 1300, lent by the fathers of the Dominican convent in Leicester. The charters from the town chest were remarkable, and include one by King John, in A.D. 1199.

◆

ARCHITECTURAL AND ARCHÆOLOGICAL SOCIETIES.

Kent Archæological Society.—The annual meeting of this society was held at Sittingbourne on the 3rd inst. The business meeting of the society was held in the Literary Institute; Earl Amherst, the president, in the chair. Amongst those present were the Rev. J. B. Moore, Sir Walter Stirling, Lord Fitzwalter, Sir John Croft, Major General Jenkyns, General M'Queen, Revs. J. Pearman, W. A. Scott Robertson, F. E. Tuke, J. S. Hoare, Mr. Godfrey Faussett (hon. sec.), Dr. Farr, Dr. Grayling, Dr. T. B. Smith, Mr. Hallett, Mr. G. W. Norman, Mr. G. Lambert, F.S.A., Mr. J. Allen, Mr. Sampson Seaton, &c. Earl Amherst, in moving the adoption of the annual report, said that its tone was highly satisfactory, and the society was in a flourishing condition. They had a large sum of money in hand, but it would be considerably larger if all the members would pay their subscriptions more punctually. The report was adopted, several new members were elected, and a vote of thanks to the noble president concluded the proceedings. The members then paid a visit to Sittingbourne Church, under the guidance of the Rev. W. A. Scott Robertson, who gave a history of the sacred edifice, which is dedicated to St. Michael. It is a handsome structure, consisting of nave, two chancels, and two side aisles, with a tower at the west end. It was burnt down, with the exception of the bare walls, in 1762, by accident, and at that time most of the ancient monuments were destroyed. In rebuilding the church many of the gravestones were removed from the graves over which they lay to other parts of the church, and some even were used to make the pavement complete. One peculiarity of the edifice is that the south chancel belongs to the Chilton estate, and the north transept to the Bayford estate. The members then proceeded to inspect numerous old churches and remains of fortifications in the district. Bayford Castle, of which only a ditch and an artificial mound are now to be seen, was built by Alfred the Great about the year 893 to serve as a check to the incursions of the Danes, who had made a raid under Hasting, a powerful chief, on the neighbouring country, and who were entrenched at Kemsley Downe, near Milton. The entrenchments are of an oval shape, and were originally 70 or 80 yards in circumference, with a moat about 20ft. wide, part of which is now filled up. Tong Castle was next visited, about the name of which there is a curious legend. Vortigern, one of the kings of Britain, being highly pleased with the conduct of a well-known Saxon chief, Hengist, in a battle with the the Picts at Stamford, in Lincolnshire, was desirous of rewarding him for his bravery, and at his request granted him as much land as an ox-hide would encompass. The tradition as to the founding of Carthage by Queen Dido was re-enacted, and Hengist cut the hide into small thongs, and enclosed within them a sufficient plot of ground to build a castle, which he accordingly erected, and named *Thwang ceastre*, or Thong Castle, whence the parish afterwards took its name. Tong Church is remarkable for the conglomeration which it presents of various styles of architecture. On the south side of the edifice the nave is divided from a side aisle by circular arches, one of the pillars, and one only, being a handsome Norman column with claw-like ornaments at its base. The north side is spanned by several pointed arches. There are evidences of Early English architecture, but the square tower is Norman. Murston Church was built in the reign of Henry II., at the time when the Early English style was taking the place of Norman architecture. It is dedicated to All Saints, and in the western wall there is a very Early English flat-head trefoil window. On the rood screen is a monumental brass in perfect preservation, bearing the date of 1488, and the name of John Everist, who was the lord of the manor at that time. There is also an ancient piscina and some few carved corbels of antique patterns. Near this church some years ago a great deal of Roman pottery was discovered. In an adjacent farmyard stands an old barn which was once the rectory of the parish. A curious inscription on the tithe barn near the present rectory was examined with much curiosity. It is as follows:—"*Si natura negat facit indignatio versum.* The barne which stood where this now stands was burnt down by the rebels' hands in December, 1659. The barne which stands where tother stood By Richard Tray is now made good in July, 1662. All things you burne or overturne but build up nought; pray tell is this the fire of zeale or hell? Yet you do all by the Spirit's call as you pretend, but pray what spirit ist (is it) a bad on (one) I dare say." The party returned shortly before five o'clock and dined at the Corn Exchange, Earl Amherst in the chair.

Surrey Archæological Society.—The annual excursion of the Surrey Archæological Society took place on Thursday week. Meeting at Redhill Junction, the party first proceeded in vehicles to Nutfield Church, under the guidance of Mr. E. V. Austin, the hon. secretary of the society. The church, which contains nothing earlier than thirteenth century work, was described by Mr. Heales, F.S.A. The chancel has lately been restored. The company next proceeded to Bletchingley church, where an elaborate paper was read by Mr. G. W. G. Leveson-Gower, F.S.A., who minutely traced the history of the church, and at the close of his paper congratulated those present on meeting in a church where restoration had been carried out so satisfactorily. The work of restoration was entrusted to Mr. Pearson, who is now architect to the fabric of Lincoln Cathedral. On leaving Bletchingley, the excursionists proceeded to the "Cardinal's Cap," on White Hill, near Caterham. Mr. J. W. Flower, F.G.S., here read an interesting paper, in which he said that the "Cardinal's Cap" was an ancient British fort. Returning towards Bletchingley, the party visited the grounds of Arthur's Seat, the residence of Mr. W. Long, and after partaking of refreshments, proceeded to visit a half-timbered house in Brewer street, Bletchingley. It is now used as a farm house, but is supposed to have formerly served as the gatehouse which led to the old Manor House, destroyed by the Earl of Peterborough in 1638. Mr. Charles Baily explained the chief features of the building, which is in excellent repair, and a good specimen of the period (*temp.* Henry VI) The quantity of oak used in its construction led them to believe that this portion of the country was one vast forest of oak. The next move was to Pendell Court, the seat of Mr. George Macleay, by whom the company were entertained at luncheon. This, supplemented by the usual speech making, brought the proceedings to a close.

◆

PARLIAMENTARY NOTES.

Science Examinations.—Mr. Dixon on Thursday week asked the Vice-President of the Committee of Council on Education whether he had received numerous complaints from the teachers regarding the science examinations in May last, and whether those complaints had just foundation. —Mr. Forster said the complaints of the teachers related to two subjects, practical geometry and building construction, but those complaints had no fixed basis. He did not believe the examination papers were too difficult; on the contrary, the standard of marks was lowered this year. He found, however, that the pupils were prepared for a purely drawing examination rather than a scientific one. At the same time the teachers were enabled to obtain payment for their pupils under the branch of drawing instruction.

Removal of Temple-bar.—In answer to Mr. Lambert, Mr. Alderman Lawrence stated that Mr. Street, in accordance with the recommendation of tha Royal Commissioners, had provided in his original plan of the New Law Courts for the removal of Temple-bar and the widening of Fleet-street at that point, and for the erection of a new bridge with a wide archway, to form a communication between the Temple and the Law Courts. The city of London was prepared to accept that plan. The removal of Temple-bar without widening Fleet street would not faciliate the traffic, and there would still be room only for the passing of two vehicles at a time.

The Wellington Monument.—Mr. B. Hope on Tuesday asked whether the Government would undertake that no further steps should be taken in the matter of the Wellington monument until the matter could be fully discussed in Parliament, and an opportunity given to the artist to make the explanations which were not included in the papers laid before Parliament?—Mr. Ayrton said that on April 14 last, Mr. Penrose, the architect, was informed that an inquiry would be held into the proceedings with reference to the monument of the Duke of Wellington, and, therefore, ample opportunity was afforded for explanation. On April 21, a letter was also addressed to Mr. Stevens, the sculptor, to the same effect, and he also had ample opportunity of offering explanation, but none was given by either of these gentlemen that was at all satisfactory to the gentlemen who made the inquiry. It was not until July 20 last that Mr. Penrose was informed that his services as superintending architect would be dispensed with; and Mr. Stevens was informed on the same day that his contract was considered to be annulled in consequence of his default. Mr. Penrose on this occasion gave no explanation, while Mr. Stevens wrote a letter which appeared to him (Mr. Ayrton) to make his position much worse than before. The consequence was that it had become necessary to hand the papers over to the solicitor of the department of works with instructions to take immediate measures for enforcing the rights of the Crown. If the hon. member desired to discuss the question next year, he could not be in a better position than by having the questions between the Crown and these gentlemen decided by a Court of Justice.—Mr. Newdegate, on Wednesday, in calling the attention of the House to the correspondence relating to the Wellington monument in S. Paul's Cathedral, said that the greatest interest pertained to everything that related to the late Duke of Wellington, and he thought it was unpardonable that correspondence on this subject, which had been ordered to be printed by the House on the 22nd July, had not been presented before yesterday. The memorial submitted to the prime minister by the sculptor was not fully set forth in the documents submitted to the House, and he hoped that inasmuch as legal proceedings were pending between Mr. Penrose and the Commissioners of Works, the House, following its usual practice, would offer no opinion on the merits of the case; and he should move that the correspondence laid on the table of the house did not furnish sufficient data to enable the House to express any opinion on the subject. As it appeared to him, Mr. Penrose had erected a full-sized model of the monument at a cost of £2,000, which he had paid for out of his own pocket, and had not reduced the value of the monument by that sum, as he was entitled to. The hon. gentleman concluded by moving that the correspondence, with respect to the Wellington monument, as laid upon the table of this House, does not furnish sufficient data whereby this House can form an opinion upon the circumstances of the case.—Mr. Ayrton observed that the hon. gentleman was entirely in error in his statement of facts with respect to Mr. Stevens, which would be seen at once on reference to the papers which had been laid upon the table. (Laughter.) He had no objection to lay upon the table all the correspondence, including the memorial of Mr. Stevens. Mr. Newdegate expressed himself satisfied with the proposed course, and withdrew his motion.

Indian Engineering College.—Mr. Plunket asked the Under-Secretary of State for India whether it was the intention of her Majesty's Government to establish an "engineering college" for the preparation of candidates seeking employment in the Indian Public Works Department; and if so, whether it was the intention of her Majesty's Government to abandon or modify the present system of competitive examination for appointments in that department; and whether it was intended to abolish the system of competitive examinations for the Forests' Service in India.—Mr. G. Duff replied that it was the intention of the Government to establish an engineering college for the Indian service, to be entered by competitive examination. It was not intended to abolish competitive examination for the Forests' Service in India.

LEGAL INTELLIGENCE.

House Agents and their Commission.—A case of an interesting nature to house agents came on for hearing on Monday, at Leeds County Court The plaintiff, Wm. Coo, estate agent, Corn Exchange, Leeds, was represented by Mr. A. C. Granger, and he sued an owner of property named Thomas Bedford, who was represented by Mr. Turner (Richardson and Turner), for £11 10s., which he alleged to be due as commission on the sale of a house in New Leeds. In the early part of this year the defendant instructed the plaintiff to advertise a villa in Leopold-street for sale. The advertisement was inserted in the plaintiff's property list, and on the 13th of April a gentleman named Allen, belonging to London, called and saw the villa, but he found it two large for his requirements. Therefore, according to the plaintiff, Mr. Allen was introduced by him to the defendant, who had some other houses on hand, and subsequently a sale of Mr. Bedford's own house was effected at the price of £700. The contention of the plaintiff was that as Mr. Allen was unknown to the defendant, he would not have heard of the residence had not the plaintiff introduced him, and further that the agency of the plaintiff in the matter was a perfectly understood thing. In proof of agency, a conversation was relied upon, in which the defendant said to plaintiff, when the negociations had been entered upon, "I am glad you have called Mr. Coo; I was just going on to your office;" and in which the plaintiff before leaving said to defendant, "It will make no difference to you or me whether I sell Mr. Allen the villa or your house," the remark having reference to the commission. Mr. Bedford, however, denied any contract with the plaintiff, and also gave a denial to the alleged conversation. Mr. Allen was called, and from his evidence it appeared that it was he himself and not the plaintiff who suggested that they should look at the other houses of the defendant. Coo had wanted him to examine the houses of another proprietor, and they had simply come to Mr. Bedford in an accidental manner. The Judge considered that the suggestion as to the purchase came from Mr. Allen himself, and he really did not see that in point of law the plaintiff could demand commission.—Verdict for defendant.

Sewage Percolation.—The Brighton Water Company *v.* Marshall was a case heard recently in the Vice-Chancellor's Court. It appeared that the defendant, proprietor of the "Walmer Castle" inn, Park-road, Brighton, had sunk a cesspool on his premises contiguous to a large tunnel made by plaintiffs from their reservoir on the Race Hill to a point in Park-road, such tunnel serving as a conduit for their main pipe. The plaintiffs, finding the sewage matter percolated through the chalk from the cesspool into the tunnel, filed a bill for an injunction against defendant. Some doubts were raised as to the nature and quality of the title of the company to the tunnel in question, which underlies the well-known Kemp estate; and, in order not to prejudice any question on this point hereafter, a decree was taken by consent for an injunction against the defendant with costs, the company waiving all claims to damages.

The Blackburn Sewage.—The *Preston Guardian* has reason to believe that the action which has been for some time pending between Sir W. H. Feilden, Bart., of Feniscowles, and the Corporation of Blackburn, in which the former claims £20,000 as damages in consequence of the pollution of the River Darwen by means of the town sewage, will be set down for hearing at the ensuing assizes to be held at Liverpool.

Commission on Building.—At the Westminster County Court, on Friday last (before F. Bayley, Esq.), the case of Haddon *v.* Morton and Co. (Limted), was heard. The action was brought by the plaintiff, Mr. John Cooke Haddon, civil engineer, Besborough-gardens, Pimlico, against defendants, extensive builders and contractors, Kennington-road, to recover the sum of £22 odd, commission on work obtained through him for them, on which it was agreed that he was to be paid 2½ per cent. The liability was denied. Plaintiff stated that in the early part of July, 1866, he was spoken to by an architect named Davis, who holds a commission as Captain in the 19th Surrey Rifle Volunteers, as to his knowledge of a builder who could erect a military shed for the corps at Kennington, when he mentioned the names of the defendants, whom he introduced to Col. Brown, and heard a contract entered into for the work required to be done for £758. He waited till the shed was completed, when on applying for payment of his commission he was told that it was not through him the work had been done, as the contract made with him had fallen through, and a fresh one entered into for the sum of £903 by the intervention of Captain Davis. He therefore, now, with the thorough knowledge that he was the first that mentioned the names of the defendants who were consequently ultimately employed to erect the shed, took these proceedings. Captain Davis corroborated plaintiff as to his mentioning defendants whom he himself also knew, but no arrangements were made with him, as they would not undertake to do the work for the sum first named. Witness subsequently suggested alterations and improvements, the defendants tendering to make them, whereupon their contract was accepted and the work done. His Honour observed that plaintiff's claim could not be established, as the terms on his introduction were not entertained, but a new contract entered into; and his decision must therefore be against him. Judgment for defendants, they not asking for costs.

◆

London and County Banking Company.—The half-yearly general meeting of the shareholders of the London and County Banking Company was held on Thursday week at the City Terminus Hall, Cannon-street. The report, which was unanimously adopted, showed the net profits for half-year to be £83,285 6s. 11d., which added to the balance of £8,895 17s. 5d., produced a total of £92,181 4s, 4d. Out of this amount the directors declared a dividend of 6 per cent., with a bonus of 2½ per cent., for the half-year, absorbing £85,000, and leaving £7,181 4s. 4d. to be carried forward to profit and loss new account.

Building Intelligence.

CHURCHES AND CHAPELS.

Aberfoyle.—A parish church at Aberfoyle has been opened for public worship. The style of architecture is Gothic. The church is of cruciform structure, with steep roof, which is surmounted at one end by a neat belfry, and ornamented at the other by a cross. Near the east end is an arched porch, floored with tile in the mosaic form, and at the other end, under the cross, is situated the vestry. The church is seated for 200 persons. The architect was Mr. Honeyman, Regent-street, Glasgow. The church which the present structure supersedes was built in 1744.

Ashby (near Brigg, Lincolnshire).—A new Wesleyan chapel is in course of erection here. The building is of red brick, with Ancaster stone dressings. In the front is a five-light geometrical traceried window, with a smaller one-light window on either side of it. The side and back windows are plain lancets, with stained glass in the heads. The two entrance doorways are sheltered with moulded and carved gablets, carried on detached columns, with carved capitals. The pews are of varnished deal, seating 200 people; the pulpit and communion are of pitch pine. The cost, including warming and fencing, will be about £400. Mr. J. R. James, of Hull, is the architect, and Mr. J. H. Whitehead, of Caistor, is the contractor.

Bampton.—The ancient parish church of Bampton was re-opened on Wednesday week, after complete restoration. The building is cruciform, and is dedicated to S. Mary; its architecture is of a mixed character, although it is plain that the Norman style prevails. It has a nave, with north and south aisles, two transepts, and a chancel. In 1867 the chancel was begun, and in about twelve months' time the work was completed, at a cost of about £600, service meanwhile being held in the nave; the contract was taken by Mr. Luker. The north and south transepts were next begun, the contracts for the work being taken by Mr. Lord, Mr. Plaster, and Mr. J. Williams, about £400 being the entire cost, and these were completed in June of last year. Further funds having been raised, the restoration of the nave was begun, Mr. Bartlett, of Witney, having obtained the contract at £800. Mr. M. Bartlett, of Witney, was the local architect, and the works have been carried on under the superintendence of Mr. Wakeford.

Bridlington.—On Tuesday week the foundation stone of S. Anne's Church, Bridlington was laid. The church consists of nave, with one aisle divided by five bays on the south side, two vestries, and apsidal chancel with ambulatory. The material to be used is moulded brick, red, yellow, and white, and the style adopted by the architect (Mr. C. T. Newstead, of York) is Early Pointed. The fittings of the interior will be of pitch-pine, and accommodation is provided for 550 persons. There will be a considerable quantity of grill work, and it is proposed to decorate the interior walls with paintings on tiles.

Calverley.—The ancient parish church of Calverley has undergone restoration under the superintendence of Messrs. T. H. and F. Healey, architects, Bradford, and on Wednesday week was reopened for public worship. With little exception, the former style of the church has been rigidly adhered to, and as the renovation has been effected tastefully, the edifice now presents a very neat, commodious, and comfortable appearance. The cost will probably not be less than £3,600. The chancel and north and south aisles have been rebuilt; the octagonal pillars and the roof of the nave restored; new roofs have been put to the chancel and aisles; there are new seats of oak; and the old pulpit has been re-adapted for use. Messrs. Tomlinson and Son, of Leeds, were the contractors.

Clee.—On Wednesday week the corner-stones were laid of a Primitive Methodist chapel in New Clee (Yorks). The new chapel is to hold 600 persons, and will be erected by Messrs. Riggall and Hewin, Mr. Joseph Benton attending to the woodwork. The architect is Mr. Wright, of Hull. The cost is to be £1,500.

Coatham.—The foundation stone of the new chapel of the Coatham Convalescent Home was laid on Tuesday week by Mr. Thomas Hague Cook, of Mirfield. The plan for the chapel has been prepared by Mr. G. E. Street. There will be seats for 180 persons, and the estimated cost is £1,400.

Dodleston.—S. Mary's Church, Dodleston, Cheshire, was reopened after restoration on Saturday last. The whole of the old church, with the exception of the tower, has been rebuilt, but portions of the old work, such as doors and windows, have been re-used in the new edifice. It will accommodate 300, rather more than the capabilities of the old church. The architecture is Perpendicular Gothic, and the building now consists of nave and north aisle, with an organ-chamber and vestry on its north side. The porch is of half-timbered oak. The whole of the interior is of chiselled ashlar, and the fittings are of varnished pitch pine. The chancel has carved stalls and encaustic tile floors. The chancel, ceiling, and east wall have been decorated by Heaton, Butler, and Bayne, of London. The cost has been about £3,000, exclusive of the boundary wall and lych-gate. The architect is Mr. Douglas, of Chester, Mr. Henry Wigginer, of Chester, being the builder; and the joiner's work having been executed by Mr. John Harrison.

Framlingham.—The Independent chapel has been re-opened after considerable alterations and improvements. Erected about 40 years ago, it has of late years shown signs of material and gradual settlement in various parts. Recently a committee was formed to take steps to ascertain the cause of these settlements, and to apply a remedy. They consulted Mr. Sugden, architect, of Leek, who at once caused an examination of the foundations to be made, and discovered that the walls, instead of being carried down to a sufficient depth to secure a hard, unyielding bed (which was found at no great depth below the footings), had been set upon plates of timber, carried all round the building, the width of the walls, on a soft subsoil; and these plates were so completely decayed as to be scarcely distinguishable in some instances from the soil on which they were placed. On the advice of the architect the walls have been entirely under-built down to a hard gravel bed, thus rendering the structure safe from further settlement. The interior has also been entirely re-arranged and re-seated, and other improvements have been effected which have given a completeness and substantiality to the building which it never possessed before.

Gunby St. Peters.—On the 21st ult. the Bishop of Lincoln opened a new church in the village Gunby S. Peters, which is near the Burgh station of the East Lincolnshire Railway. The old church, a plain whitewashed building, was erected about 1634. This, after having undergone several alterations (not improvements), was rapidly falling into decay, when, in 1868, Mr. Fowler, of Louth, furnished a design, which has been carried out at a cost of about £1,300.

Halifax.—Last week the new and handsome church of S. Mary, Halifax, was consecrated by the Bishop of Ripon. The architects are Messrs. Mallinson and Barber, of Halifax, and the style is Geometrical Decorated, the principal entrance being through the tower at the west end of the north aisle. The principal decoration has been bestowed upon the chancel arch, the large five-light east window, and the reredos, which is of Caen stone. The total cost of the building will be about £8,000.

Hull.—On Saturday last the foundation-stone of a new Danish church, dedicated to S. Nicolai, was laid at Hull. The cost is estimated at £2,500. The church is designed in the Gothic style, and is to accommodate about 250 persons. The body of the building is 28ft. by 55ft.; there is an apse for the altar and vestry, and accommodation is provided for a reading room 30ft. by 16ft. Mr. W. Botterill, of Parliament-stret, Hull, is the architect, and Messrs. Lison and Wilkinson the contractors.

Liverpool.—The new church of S. Stephens', Byrom-street, Liverpool, has been completed. The building, which has been erected in accordance with plans prepared by Messrs. Culshaw and Summers, of Rumford-place, will seat about 750 persons, and has cost £8,300, irrespective of the price of the land. The contractors for the entire works were Messrs. Grindrod and Hargreaves, of Hope-street. The walls of the church are of brick, with yellow Stoughton stone dressings, and nearly all the carved and ornamental work has been expended upon the front of the structure, which is composed of Yorkshire shoddies and Stoughton stone.

Pickering.—On Tuesday week the Archbishop of York consecrated a new church at Newton-upon-Rawcliffe, five miles from Pickering. The church is a plain structure, and built substantially of stone procured in the immediate neighbourhood. The church is dedicated to S. John the Evangelist, and will seat 150 persons. The style adopted for the church by the architect (Mr. Tarn, of London) is Early English, and the cost has been £800. The roof is open-timbered and high pitched, and the seats are open.

St. David's Cathedral.—The committee appointed to superintend the restoration of S. David's Cathedral have determined at once to commence the rebuilding of the roof and ceilings of the nave and aisles, postponing for the present the restoration of the pavement of the nave, also the west end and porch. The repairs of the transepts and chapter-house have also to be postponed. The receipts up to this time have been £22,000. The actual expenditure is £18,500, leaving a balance in favour of the fund of £3,500. Mr. Gilbert Scott estimates that about £8,000 more will be required to complete the restorations, and efforts are now being made to raise that sum.

Sunderland.—Last week a newly-erected district church in connection with the parish church of Monkwearmouth, dedicated to S. Bede, was consecrated by the Bishop of Durham. The new church, a neat stone building with a handsome interior, stands at the end of the Newcastle-road at Monkwearmouth, and was built by Mr. Scott, of Sunderland, from the designs of Mr. Pritchett, architect. It is designed to accommodate about 600 persons.

Thixendale.—A very beautiful new church, designed by Mr. George Edmund Street, A R.A., has been built at Thixendale, on the Wolds, East Riding, at the sole cost of Sir Tatton Sykes, Bart. The edifice has been ready for consecration for fully six months, but from certain causes disappointment has resulted on the two occasions fixed for the ceremony. It was first announced that the consecration was to take place on the 4th April last, and every preparation was made, when on the previous Saturday only it was stated the Archbishop would not consecrate, in consequence of some informality in the deed of conveyance. Rumour at that time said that all was not right in the chancel. The ceremony was again fixed for Friday last, but early in the week it was intimated to the founder that unless the super altar was altered the consecration could not take place. To this, it is understood, Sir Tatton declined to accede, and another postponement takes place *sine die*. The super altar is a slab of real marble, supported at each end by jambs of Caen stone. The oak communion table is partly overhung by this slab, which is walled into the the base of an elaborately panelled reredos of Caen stone and Devonian marble, of which it is really a part. This, it is alleged, was shown in the drawings of the church which were submitted to the Archbishop. In this difficulty the architect has been sent for, Sir Tatton refusing to permit any alteration without his sanction, and the church remains still useless.

Wettenhall.—S. David's Church, Wettenhall, was consecrated on Wednesday week. The style is a simple Gothic type of the 13th century. The building, which is cruciform in shape, and consists of nave, transepts, and porch, is of brick, with a little of the red stone from the old building, and white Kelsall stone sparingly introduced. The dimensions are—from east to west, 67ft. 5in.; from the north to the south walls of the transepts, 36ft. 5in.; the nave being 14ft. 4in. wide. The sittings will accommodate 200 persons. Mr. James Redford, A.R.I.B.A., 43, Lower Moseley-street, Manchester, and Mr. J. A. Davenport, of Over, near Winsford, are the architects; and Mr. Peter Hodgkinson, of Booth-lane Head, Sandbach, the builder.

BUILDINGS.

Ipswich.—The new Ipswich Lunatic Asylum has just been completed. The building was begun in May, 1868, and has cost about £19,500, accommodation being provided for 180 patients. Mr. Ribbans, the town surveyor, was the architect, and prepared his plans in accordance with the rules of the Lunacy Commissioners. The building is of red brick externally, and was erected by Mr. Gibbons, builder, Mr. Catchpole being the clerk of the works.

Leek.—A new boys' school and lecture-room is about to be erected in connection with S. Luke's Church, and the existing school buildings will afterwards be used for girls and infants only. The total outlay will be about £1,200. Mr. Sugden, of Leek, is the architect.

Salford.—On Saturday afternoon the foundation stone of a new Sunday school in connection with the Chapel-street Congregational Chapel, Salford, was laid. The building is to accommodate between seven and eight hundred scholars. Internally it will consist of a general schoolroom and class-rooms, above which there will be a gallery, composed of three tiers of seats. The structure, which will be a plain but substantial one, is to be built of brick, with stone dressings. The total estimated cost is £2,300. Mr. Henry Fuller, of Manchester, is the architect, and Mr. William Brown, of Salford, the builder.

Wheelock, Cheshire.—New National Schools, comprising separate boys', girls', and infants' schools, are about to be erected here, on land given for the purpose by Sir Charles Shackerly, Bart., who is also a principal contributor to the erection of the schools. The plans have been approved by the Privy Council. Mr. Sugden, of Leek, is the architect.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

To Our Readers.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

Letters relating to advertisements and the ordinary business of the Paper should be addressed to the EDITOR, 31, TAVISTOCK STREET, COVENT GARDEN, W.C.

Advertisements for the current week must reach the office not later than 5 p.m on Thursday.

Received.—C. B. A., C. S., G. H. R., H. S., E. H. W. S., J. S. G., J. H. D., J. N., Capt. S., Rev. E. B., W. W., Enquirer, J. M., J. R. D., T. and Son, W. and Co., S. and Co., S. and G., J. M. B., G. Bros.

J. R. G.—We do not insert quack advertisements.
J. M.—About a month hence.
T. C. E.—Drawings returned.
J. M.—Other fish to fry.
G. A. Noble.—Do not know the address.
J. L. T.—Send the drawings.
W. T.—Have patience.

Correspondence.

ARCHITECTS AND BUILDERS.

(*To the Editor of the* Building News.)

Sir,—In last week's Building News you give a letter from an architect against builders or joiners making plans, &c. Will you allow something to be said on the other side by one who has passed from the bench to be shop-foreman, to outdoor and managing foreman under a contractor, and has had an opportunity to learn some of the ins and outs of contracts?

Your correspondent says that architects do not want builders to give low tenders; that they do all they can to advise their clients not to accept the lowest. Well, is this fair? May it not be asked what principle should be acted upon, or what can be the object of calling for tenders, unless it be to obtain the advantages of competition? Is it right to put builders to the trouble of getting up estimates, at the same time that the architect or his client may have a particular man that he means shall have the job? Again, what chance is there for a man to rise from an inferior to a higher position except by tendering; is he to buy the favour of some architect in large practice? Again, is it not a fact that many builders, like architects, know comparatively nothing of the business, who, when they have to get up a tender, instead of being able to go through the plans and extract quantities, and price them, employ an architect to do it for them? I am aware there are many excellent gentlemen who are above this; I have met with several; but it is quite true that in this matter the right man can evade specifications and trick architect and client.

It is said that many of the builders are scamps, and are not to be trusted; but whose fault is it where an architect is employed? Any honest builder would prefer an architect between him and the client; but if an architect takes the money from his client ought he not fully to discharge his duties? Why do they call upon builders to give securities for carrying out contracts when they are only to receive a given percentage as the work proceeds, and that upon the certificates of the architect? It seems much more reasonable that the architect should give the security than that the other should do so. I have known in what is called a select competition, that only one man out of the number competing was able to give the security, and he allowed to name the competitors. Of course he had the job. In reference to builders making their own plans, is it not true that there are many builders who get little jobs to do, and will go at once and employ an architect to give them plans and details for no other purpose but to get in his debt, when the architect knows he shall never get paid until he puts some job into their hands, when of course the client has to suffer to make up for this.

Again, are all architects up to the duties they undertake? Many of them understand the principles of proportion and arrangement on paper, as well as being able to draw up plans and specifications, and for these duties are probably well qualified, but they know very little of the practical part. They do not know whether a stone is on its natural bed, or when it is face-bedded; nor do they know the difference between Memel, Dantzic, or Swedish timber when sawn out into scantlings; the same by deals—Christiana, or Wyburg; or of the difference of the several kinds, which makes a great difference in the quality of work. One builder may buy his deals at £15 or £16 the 100; another may give £24; yet they all come under the term yellow timber. The consequences are that one builder, having done work under the architect knows the way to work it; indeed, it has appeared to me many times that the architect was determined not to see when he goes to the job, so long as the details of elevation and ornamentation are something near the mark.

The tone of your correspondent's letter is very suggestive of despotic assumptions that will not be endorsed by any liberal-minded architect. Is it to be received in this nineteenth century that because a man started life as a joiner or in any other branch of the building trade, he is to be kept down, whatever his ability may be, in order that he may not intrude within the assumed domain of a privileged class?

I give an instance that occurred to me some short time since. A man applied to me to build a house for him, asking me to give plans and specifications as to what I was going to do for the estimated cost. I suggested that he should employ an architect, naming one. He said, at first, that he did not think it worth while, as he had confidence in me, but he would think about it. He consulted some of his friends. They recommended another architect, who got tenders for the job, allowing me to tender. My tender being a few pounds too high I lost the job. Of course, I do not know what passed between architect and client, but I was told afterwards that it was my own fault; if I had not made the suggestion he would not have thought of it, and would have been very well satisfied with my estimate. Yet, forsooth, because I happen to be able to do such a thing—acquired in the time which many spend in the pothouse—your amiable correspondent would not allow me to tender, but would prefer giving the advantage to those incapables whose chief ability is employed to trick architect and client.—I am, Sir, &c.,

Fair Field and no Favour.

WESLEYAN CHAPELS IN LONDON.

Sir,—In your issue of last week you say that it is intended to build ten new Wesleyan Chapels in London, at a cost of £20,000. The fact is, that as the Metropolitan Building Fund resources are just about exhausted, Sir Francis Lycett offered £50,000 for new chapels to be built during the next seven years, with the hope that country congregations, who have not done much hitherto, would come forward with another £50,000.

During the last seven or eight years chapels, costing upwards of £100,000, have been built in the metropolis; but for reliable figures I would refer to published reports, and to the *Watchman* of the last two or three weeks, which contains full accounts of the proceedings at the different Conference Committees.—I am, Sir, &c.,

W. J. Heaton.

Southport, August 8, 1870.

ASSISTANT SURVEYORSHIP.

Sir,—It would be interesting to many of your readers could they learn through the medium of your pages the nature of the questions put at the recent examination for the Assistant Surveyorship at the Office of Works, as they could by this means become acquainted with the requirements other than correct spelling considered necessary by the Civil Service Commissioners for candidates for such a post. The publication of such examination papers would also be of great service to the younger members of the profession, by affording them an opportunity of testing their own knowledge.—I am, Sir, &c. A. G.

◆

Intercommunication.

◆

QUESTIONS.

[1911.]—STUCCO WASH.—Will any person be so kind as to give particulars and quantities of ingredients which may be depended upon to make a tolerably permanent stone colour outside wash?—T. P.

REPLIES.

[1905.]—CALCULATING EARTHWORK.—"Young Engineer" cannot obtain the *true* cubic contents of the cutting he mentions, either by the method of *mean heights* or *mean area*—the former, in the case he mentions, giving an error *in defect* of 5,599 cubic yards, and the latter an error *in excess* of 11,193 cubic yards, as compared with the true contents, = 120,981 cubic yards. The *prismoidal formula*, used by Sir J. Macneill in calculating the tables published by him some twenty, or more, years ago, gives the true and mathematically correct contents (there are a variety of other approximative methods, more or less correct); it is this:—The sum of the areas of each end added to four times the mid-area, multiplied by the length in feet, and this product divided by 6 = the contents in cubic yards. For instance in the case given:—

11 height.
1·5 slope.
55
11
16·5
30 base.
46·5
11 height.
511·5 = area of lesser end.

35 = height.
1·5 slope.
17·5
35
52·5
80 base.
82·5
35 height.
4125
2475
2887·5 = area of greater end.

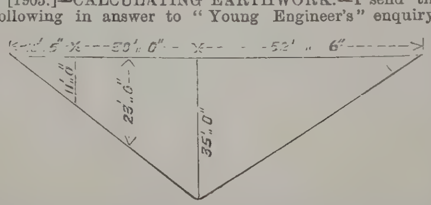
11 } heights.
35 }
2)46
23 mean height.
1·5 slope.
115
23
34·5
30 base.
64·5
23 mean height.
1935
1290
1483·5 mean area.
4
5934·0 = 4 times mean area.
2887·5 = area of greatest end.
551·5 = of lesser end.
6)9333·0 sum of areas.
3)1555·5 sum of 6.
9) 518·5
57·61
2100 length in feet.
576100
11522
120·981 contents in cubic yards.

By using Macneill's tables, the above result is obtained with much less figuring; for example:—

57·61 table number, page 104.
2100 length in feet.
3761,00
11522
120,981 cubic yards.

H. S. P.

[1905.]—CALCULATING EARTHWORK.—I send the following in answer to "Young Engineer's" enquiry.



Assuming that two right-angled triangles are equal to a rectangle, we shall find the question stand thus:—

Area of the greater end =
82ft. 6in. × 35ft. 0in. = 2887ft. 6in.
Area of the lesser end =
46ft. 6in. × 11ft. 0in. = 511ft. 6in.
2)3399ft. 0in.
1699ft. 6in. mean area of [section.

Then, as the cutting is 700 yards long = 2100ft.
∴ 2100ft. × 1699ft. 6in. = 3568950 ÷ 27 = 132183⅓ c. yds.
or thus:—
2100 × 30 × 23 = 1449000 cubic feet in cutting.
2100 × (52 — 6 × 35 — 0) + (16 — 6 × 11) ÷ 2
= 1837ft. 6in. + 181 — 6 = 2019 ÷ 2 = 1009ft. 6in.
= mean area of slopes.
then,
2100 × 1009ft. 6in. = 2119950 cubic feet in two slopes,
and 1449000 cubic feet in cutting,
= 3568950 ÷ 27 = 132183⅓ cubic yards, as before.

G. Ray.

◆

LAND AND BUILDING SOCIETIES.

Improved Industrial Dwellings Company (Limited).—The fourteenth half-yearly meeting of this company takes place to-day (Friday) at the Mansion-house. The report to be presented to the meeting states that the whole of the share capital, viz., £125,000, has been subscribed, and a further sum of £125,000 will be borrowed at 4 per cent. from the Public Works Loan Commissioners; which will represent a total capital of £250,000. Of the loans, viz., £52,000, already arranged, sums amounting to £40,000 have been received, and the balance will be immediately taken up. The negotiations for the loan of £17,000 on the Ebury-street and Ebury-square estates are still pending. £33,562 18s. 4d. has been expended during the half-year on works in progress, and in completing the purchase of the Bethnal green estate, &c., and the total expenditure on capital account is now £167,903. The gross rents received during the half-year amount to £6,878 0s. 7d., interest allowed by bankers and other items amounting to £68 15s. 8d., making a total income £6,946 16s. 3d. The total expenditure, including the contributions to the reserve accounts amounts to £3,169 4s. 8d., leaving a profit of £3,777 11s. 7d., which is equal to £6 0s. 10½d. per cent. per annum on the subscribed capital. The Directors recommend that, as heretofore, a dividend at the rate of 5 per cent. per annum be paid. With the exception of "Nelson" buildings at Greenwich, the general position of the company's estate must be regarded as highly satisfactory. At Greenwich, notwithstanding a further reduction of rents has been made, there has been no improvement in the occupation, the great depression of trade in that locality still existing. The Directors have completed the purchase of the Bethnal-green estate. The five blocks of buildings at Ebury-street and Queen-street, Pimlico, are approaching completion; but will not be ready for occupation before October next. At Ebury-square, however, the dwellings are in a more forward state, and will probably be occupied before the end of August. Fifty-four dwellings on the Bethnal-green Estate have been completed, and 13 additional blocks of dwellings, which will afford accommodation for 130 families or about 500 persons, are now in course of erection on the same principle. The company has now nine blocks of buildings, viz.:—1. King's-cross road; 2. Greenwich; 3. High-street, Wapping; 4. Old St. Pancras road; 5. City-road; 6. Redcross street, Southwark; 7. Britannia-street, King's-cross-road, 8. Willow-street, Finsbury; 9. Bethnal-green. The whole number of tenements is 0,347, of which 390 are three-roomed and 623 are two-roomed. The report complains of the assessments having been unjustly increased under the operation of the "Valuation of Property (Metropolis) Act," and intend to take every necessary step to prevent such assessments being confirmed. The offices of the Company will, for the future, be at No. 34, Finsbury-circus.

◆

WATER SUPPLY AND SANITARY MATTERS.

Brighton.—The first meeting of the Brighton Sewers Board was held on Monday afternoon. The Board has been constituted pursuant to the 13th section of the Brighton Intercepting and Outfall Sewers Act. It was resolved that Mr. Hawkshaw be invited to confer with the Board as early as possible with respect to the preparation of drawings and a specification, upon which a contract may be taken for carrying out the undertaking.

Chorley.—The Chorley Improvement Commissioners have received a letter from the Medical Department of the Privy Council directing them to put in force the powers conferred by the Nuisance Removal Act of 1855 with reference to the bad construction of dwellings.

Hull Water Supply.—The Hull Town Council have authorised the Water Works Committee to instruct Mr. Dale, the Engineer to the Corporation, to prepare plans, specifications, and detailed drawings of the scheme suggested by him for increasing the water supply, and to advertise for tenders for executing the works.

The Disposal of Town Refuse.—Mr. Conyers Morrell, the inventor of Morrell's ash closet and apparatus, recently read a paper at the Liverpool Free Library "On the Health of Towns, and the Treatment and Disposal of Town Refuse." Mr. Morrell argued that the only easily practicable and economical system of utilising human excreta was by deodorisation with fire ashes. The water-closet system he condemned on account of the waste of water, and its deteriorating effect upon the manurial properties of the excreta. It was now out of the question to turn sewage into rivers, and in many instances it was impracticable to utilize the sewage on land. The ash closet system would add to the value of the manure which resulted, and do away with the necessity of costly sewage works. At Liverpool the discharge from the sewers' mouths was at least 37,500,000 tons annually, requiring at least 7,000 acres to cleanse it.

PRESTON.—The following resolutions with respect to the extension of the water supply of Preston have been agreed to by the Water Committee of the Town Council:—"That the tenders of Mr. Robert Carlisle for executing the three contracts for constructing the conduit for obtaining the supply of water from the Langden and Hareden Brooks, according to the plans and specification, for the following sums, viz., Contract No. 1, £10,427 6s.; No. 2, £9,975 5s. 4d.; No. 3, £8,631 16s, be accepted upon his giving satisfactory securities for the performance of the several contracts;" and "that a 3in. main be laid from the main in Fishergate-hill through Christian-road to Charles-street, the estimated cost being £94." The first sod of the new works was cut at Chipping on Thursday week.

WIRKSWORTH.—Mr. Hawksley, of Nottingham, is engaged in making a survey of the waterworks, with the view of obtaining a better supply. His report is expected in a few days.

◆

STATUES, MEMORIALS, ETC.

BIRMINGHAM.—The statue of Rowland Hill, which has been executed by Mr. Peter Hollins, is, by consent of the Birmingham Exchange Committee, to be placed in a bay of the Exchange building until the new Post-office is completed. The statue is 10ft. 9in. in height, including the pedestal, upon which there is a bas-relief of a sick girl in bed receiving a letter from a postman.

THE LATE EARL OF CARLISLE.—A statue of the late Earl of Carlisle, erected by the people of Cumberland to commemorate the public services and personal worth of the deceased nobleman, was unveiled at Brampton on Tuesday. The statue is of bronze, by Foley, and stands about 8ft. high, on a pedestal of the same height, it being, to a certain extent, a replica of the Dublin memorial in Phœnix-park. The figure is attired in the robes and insignia of the Order of the Garter. His Lordship is represented in a standing position, with one hand resting on a book placed on an octagonal dwarf column. The mantle is so thrown back as to display the entire front of the figure, and is partly held back by the left hand. The front of the pedestal bears the following inscription:—"Erected by the people of Cumberland to commemorate the public services and personal worth of George William Frederick Howard, seventh Earl of Carlisle, K.G., born April 18, 1802, died December 5, 1864." The cost of the statue and the pedestal will be about £800.

Our Office Table.

TOTAL DESTRUCTION OF THE NEW COVERED MARKET AT PRESTON.—On Saturday morning, about half-past seven o'clock, the new covered market in course of erection in the Orchard, at Preston, and which was fast approaching completion, fell with a tremendous crash, startling the whole neighbourhood. The design of the building was that of a very large open shed, constructed entirely of iron, with twelve or fourteen clustered pillars on each side, and four at each end, with longitudinal girders and principals for the roof. Preparations were making at the very moment of the accident to prevent the vibration of the roof, to which the casualty is attributed. The contract for the erection of the market was let in January last to Mr. Joseph Clayton, ironfounder, of Preston, for £6,070. The other tenders were—D. Howarth, Rochdale, £7,070 12s.; E. Bickerstaffe, Preston; £7,100; W. Allsop, Preston, £6,687; J. Tildesley, Bilston, £9,480; Preston Waggon and Iron Company, £7,468; Messrs. Newton and Co., Accrington, £6,850.

WHITWORTH SCHOLARSHIPS.—The practical examination of workmen and students for these scholarships has been fixed by Sir Joseph Whitworth to take place at his works at Manchester on the 30th August and 1st September next.

ROYAL INSURANCE COMPANY.—With the annual report of the Royal Insurance Company, presented at the general meeting of shareholders on the 5th inst., the directors submit the results of the quinquennial valuation of the life business made by Mr. Samuel Brown (late president of the Institute of Actuaries) in the form proposed in the schedules of the Life Assurance Companies' Act, passed in the session of Parliament just closed. Mr. Brown, in his report, states that the table used for the valuation has been Mr. Griffith Davies' Equitable Experience, and the rate of interest assumed has been 3 per cent. The net premiums only, as computed upon each policy, have been valued so as not to bring into account any portion of the future profits. The results of the valuation shows that there are in force 14,977 policies, assuring, with existing bonuses, £6,721,502, and annuities, £18,354. The net premiums, after deducting the loading and bonus reductions, are £169,310; the net value of the assurances and annuities, £1,005,677. The accumulated funds are £1,255,335, showing a surplus of £249,658. This, we believe, is the first quinquennial valuation made in the form of the schedules of the new Act, and is therefore notable. In the fire department the premiums were £485,180 5s. 8d., and the losses, £290,685 10s. 11d. The net profit of the department, including interest, was £78,152 3s. 5d., or at the rate of rather more than fifteen hundred pounds per week.

MIDLAND INSTITUTE OF MINING ENGINEERS.—The usual monthly meeting of the members took place on the 3rd inst., at Barnsley, when Mr. Morris, of Newcastle-on-Tyne, read a paper "On Fan Ventilation," with special reference to Guibal's invention. At the conclusion of the paper, a discussion on it occurred, and, not being terminated, it was adjourned till the next meeting, when also papers will be read by Mr. Cooper "On the different modes of working coal," and by Mr. Bailey, "On signalling in mines."

INSTITUTION OF MECHANICAL ENGINEERS.—On Friday last upwards of 200 members of this institution visited the Butterley Ironworks, and inspected the blast furnaces, blowing engines, fitting shops, boiler yard, &c. The Codnor Park Works were then visited, with the refineries, the forge, the sheet mill, the rolling mill, the new forge, and the welding shop, the latter containing Bertram's patent furnaces, Warder's patent method of forming a girder or deck beam by welding two ┬ irons together to form an ⌶ section, &c.

SOCIAL SCIENCE CONGRESS.—The preparations for the annual Congress of the National Association for the Promotion of Social Science, to be held at Newcastle-on-Tyne from the 21st to the 28th of September, are in an advanced state, the appointment of presidents and special questions for discussion being already complete. The Duke of Northumberland will preside over the association, and deliver his inaugural address on the first evening of the meeting. The "Health Section" is at present thus arranged:—President, Robert Rawlinson, C.E., C.B.; vice-presidents, I. Lowthian Bell; Edward Charlton, M.D.; William Farr, M.D., F.R.S.; George Godwin, F.R.S.; Stevenson Macadam, Ph. D., F.R.S.E. 1. What is the best method of disposing of sewage and excreta? 2. What modifications are desirable in the existing sanitary laws and administration? 3. What legislative measures ought to be taken to prevent the adulteration of food, drink, and drugs?

DEATH OF SIR JOHN THWAITES.—The somewhat sudden decease of Sir John Thwaites, the well-known chairman of the Metropolitan Board of Works, occurred at his residence, Meaburn House, Putney, early on Monday morning, from an attack of English cholera and diarrhœa of only a few days' duration. He was about 55 or 56 years of age, having been born at Meaburn, Westmoreland, in 1815. He was the son of the late Mr. Christopher Thwaites, of Toddy Gill-hall, in the county of Westmoreland; his mother was Hannah, daughter of a Mr. John Smith. In early life, having received his education at a school at Reagill, in his native county, he entered business in London, and was for many years a draper and woollen merchant in the Borough and in Oxford-street. While thus engaged he was frequently employed on boards of parochial committees in the metropolis, and about eighteen years ago was nominated as one of the members of the Metropolitan Commissioners of Sewers, in which he sat as the representative of Southwark. In December, 1852, he was chosen the first chairman of the newly-established Metropolitan Board of Works. He received the honour of knighthood in 1865, as a compliment to his high and responsible office, upon the completion of the main drainage works. One of the last appearances of Sir John Thwaites in public was on the occasion of the recent opening of the Victoria Embankment, in executing which he had from the first taken much interest.

TECHNICAL INSTRUCTION FOR BIRMINGHAM ARTISANS.—Mr. Josiah Mason (some of whose splendid gifts to the town of Birmingham we have already chronicled) has purchased a site containing 4,000 yards of land, in the centre of the town, whereon he intends to erect a block of buildings in which it is intended to give practical scientific instruction to all classes engaged in the various manufactures of the town and district. Teachers of the first eminence are to be engaged to give preliminary or elementary scientific instruction.

PROPOSED NEW POULTRY MARKET FOR LONDON.—The Markets Improvement Committee of the Corporation of London have reported favourably upon their architect's (Mr. Horace Jones) plan for the erection of a new poultry market in connection with the New Meat Market in Smithfield. The estimated cost of the buildings is £100,000.

THE SURREY GARDENS.—When the new buildings at Stangate are completed, S. Thomas's Hospital will be removed from the Surrey Gardens, Newington. Various rumours are in circulation as to the ultimate destiny of the site. It is severally reported that the place is to be opened as a minor Cremorne, that the site is to be utilized for building purposes, and new streets laid out, and that it is to be laid out as a public park and recreation ground. We believe that there is more probability that the second of these rumours is the correct one; and, if so, a great opportunity will be afforded of improving the street communication of the neighbourhood. New-street, Kennington Park-road, might be continued right on to Lorrimore-square, while Manor-place and Amelia-street, Walworth, might be carried on to meet the proposed extension of New street at right angles. Even were the place to be purchased by some philanthropist for the purpose of being converted into a park—for the authorities are not likely to do so, Kennington Park being very near—the first of these suggestions might be carried out with advantage, the road being carried through the park.

IMPROVEMENTS IN BOLTON.—Some of the Committees of the Bolton Corporation are taking action with the view of carrying out a number of long-projected improvements in the town, at a cost of upwards of £29,000. The following are some of the items:—Widening Mealhouse-lane, £2,623 10s.; formation of new street from Deansgate to S. George's-road, £24,483 2s. 6d.; extension of Duke-street, £452 16s. 3d.; improvement of Bath-street, £125; improvement of School-hill, £750; and extension of Burns-street, £650. In addition to the above, improvements are to be effected at the corner of Blackburn-road and Halliwell-road, and in John Taylor-street, and plans have been passed for a new bridge over the River Croal in Mayor-street.

Chips.

Longfleet parish church, Dorsetshire, was opened on Sunday week, after restoration.

The Gravesend Gas Company have reduced the price of gas supplied by them from 4s. 6d. to 4s. per thousand cubic feet, the reduction to take effect at Christmas next.

Sir Shafto Adair will lay the foundation stone of a new Presbyterian church at Ipswich early in November.

The parish church of S. Andrew, Wormingford, Essex, has just been restored by Mr. Joseph Grimes, of Colchester.

The scheme for the erection of the Denmark Theatre and Winter Garden, in Leicester-square, has fallen through. The company proposing to start it is now in liquidation.

A new church at Helsby, one of the townships of the large parish of Frodsham, Cheshire, was lately consecrated. Mr. John Douglas is the architect of the church, which has cost £2,000, and will accommodate 300 persons.

Lord Harrowby laid the foundation stone of the new schools for S. Bartholomew's, Shepperton-street, Islington, on Saturday week. The estimated cost is £2,087.

The twelfth prize distribution of the Ceramic and Crystal Palace Art Union took place last week. The report read by Dr. Doran congratulated the subscribers that, notwithstanding active competition, the society still continued to hold its own.

The Sultan has entrusted his architects, Serkis Bey and Agop Bey, to prepare a plan of the rebuilding of Pera. It will be compared with the three other plans made by the technical department of the municipality, and a definite choice made.

The freehold site of the church of S. Mary Somerset, Upper Thames-street, occupying an area of 3,740 square feet, was last week sold by tender for the sum of £10,200.

The bridge over the Thames at Walton was opened free of toll on Monday week by the joint committee of the Metropolitan Board of Works and the Corporation of the City of London.

The Marquis of Westminster has offered a site for and a donation of £1,000 towards the erection of a workmen's club and institute for Pimlico. £1,500 more is required for the building fund.

The Duke of Devonshire has consented to lay the foundation stone of the new buildings for Owen's College, Manchester, on September 5.

New schools for the church of the English Martyrs, Preston, were commenced last week. Mr. Edward Bickerstaffe is the contractor.

The new Corporation Baths at Bath have just been completed. Messrs. Wilson and Willcox are the architects

A meeting of the principal shareholders in the Wirksworth Town Hall Company was held on Tuesday afternoon to receive the various designs sent in from the architects who had been invited to compete for the erection of the building. Messrs. Thompson and Young, of Derby, are among the competitors.

Several alterations are about to be made at the Tiverton Borough Gaol, from plans by Mr. Williams, architect.

A public meeting has been held in Salisbury, under the auspices of the Corporation, to consider what steps are necessary to be taken in order to establish public baths in the city. Lord Radnor has offered to give a site.

An act has just received the royal assent for the construction of a pleasure pier at S. Leonards, about a mile distant from the Hastings pier. It will be built chiefly of iron on screw piles, and is to be about 750 ft. long, and to cost £15,000. A glass pavilion will be placed at the seaward end, and there will be refreshment and other stalls.

◆

Timber Trade Review.

◆

Messrs. Churchill and Sim's sale on August 17 was composed of the following lots:—

28,000	Spruce deals, &c.
25,000	Quebec pine deals, &c.
95,000	Swedish deals and battens
50,000	Norway deals and battens
400	Pitch pine planks
700	Oregon pine planks
130,000	Prepared flooring and match boards
4,000	Fresh Norway spars
130	Fathoms lathwood
30	Loads Swedish balks
112	,, Quebec elm timber
57	,, ,, ash timber
110	,, ,, red pine timber
380	,, Dantzig fir timber
300	,, Memel fir timber
	&c., &c.

The following prices were obtained:—

		£ s.		£ s.
Bjorneborg yellow	per Petg. std.	6 10	to	7 10
Do. white	3 × 9	7 10	,,	7 15
Christiana 1st white 3 × 9	120 × 12ft.	14 5	,,	17 10
Do. 2nd do.	3 × 9	13 5		
Do. 1st and 2nd do.		13 15		
Do. 3rd do.		11 15		
Do. 2nd yellow	2½ × 6½	7 0	to	7 5
Do. 3rd do.	3 × 9	14 10		
		s. d.		
Do. spars 4 to 6in.	foot run	0 1½		
Do.	under 4in.	0 0⅞		
		£ s.		£ s.
Calmar lathwood	cub. fthm.	3 10		
Christinestadt yellow 2½ × 7	per Petg. std.	7 0	to	7 10
Do.	3 × 7	7 0		
Do. white	3 × 9	7 15		
Do.	2½ × 7	6 15		
Do.	3 × 7	7 5		
Dram yellow H K 2½ × 6½	120 × 12ft.	6 5		
Do. 2nd do.		7 0	,,	7 5
Do. 3rd do.		6 5	,,	6 10
Do. 1st white do.		5 5		
Do. 3rd do.		5 10	,,	6 0
Dantzig best middling timber	load	Bought in at		
		s.		s.
				67
Do. good middling do.		Do.	at	
		59	to	64
Do. middling do.		Do.	at	59
Do. common middling do.		Do.	,,	52
		£ s.		£ s.
Frederickshald 1st white 3 × 9	120 × 12ft.	14 10	to	14 15
Georgia pitch pine 3 × 11	per Petg. std.	12 10	,,	12 15
Gefle 1st and 2nd yellow do.	4 × 9 to 12	11 5	,,	11 15
Do.	3 × 11	11 5		
Do.	3 × 9	10 10	,,	12 10
Do.	3 × 8	8 10		
Do.	3 × 7	9 0		
Do	2½ × 9	9 15		
Do.	2½ × 7	9 15		
Do	2 and 1in.	6 15	,,	10
Do. 3rd yellow	4in.	9 10	,,	10 5
Do.	3in.	8 0	,,	10 10
Do.	2in.	8 0	,,	10
Do. 4th yellow	4in.	9 0	,,	9 5
Do.	3in.	8 10	,,	9 5
Do.	2½in.	8 10		
Do.	1 to 2in.	8 0	,,	9 0
Hernosand 1st and 2nd yellow	4in.	9 10	,,	10 0
Do. 3rd yellow	4in.	9 5	,,	10 0
		s.		s.
Memel 2nd middling timber	load	74	,,	75
Do. Mannerlatten do.		74		
Petersburg 1st yellow	3 × 9			
		£ s.		£ s.
	per Petg. std.	12 10		
Do.	3 × 7	11 0		
Do.	2½ × 7	12 0	,,	12 5
Do. 2nd do.	3 × 11 × 9	9 5		
Do.	3 × 7	8 10		
Do.	2½ × 7	8 15		
Do.	1¼ × 7	8 5		
Do. 1st white	3 × 11	10 0		
Do.	3 × 9	9 10	,,	10 0
Do.	3 × 7	8 10	,,	9 0
Do.	2½ × 7	8 0	,,	8 15
Do.	1¼ × 7	7 5		
Do. lathwood	cub. fthm.	6 0	,,	6 5
Quebec 1st bright yellow pine..				
Field		164 12 0		
	per Petg. std.	14 0	,,	18 10
Do. 1st dry floated		14 10	,,	18 0
Do. 2nd bright	2in.	10 5		
Do. 2nd dry floated		11 15	,,	13 10
Do. 3rd bright		9 0	,,	9 10
Do. 3rd dry floated		8 10	,,	9 10
Do. 2nd white spruce 3 × 9	120 × 12ft.	14 10		
Do. 3rd do.	3 × 9	13 10		
Do. elm	load	5 0	,,	5 10
		s. d.		s. d.
Do. ash		70 0	,,	72 6
Do. red pine		62 6		
Rimauski 1st white spruce	3 × 9	£ s.		£ s.
	190 × 12ft.	14 10		
Riga lathwood	cub. fthm.	4 10		
St. John's white spruce	3 × 9			
	120 × 12ft.	13 0	,,	13 5
Do. 3 × 11	120 × 12, 3 × 9	13 10	,,	13 15
Do.	3 × 10	14 0		
Do.	3 × 7	12 5		
Do. yellow pine	per Petg. std.	8 0		
Soderham 3rd yellow do.	2½ × 7	8 10		
Do.	2½ × 8	8 0		
Sandarne 1st and 2nd yellow	3 × 7	9 0		
Do.	4 × 7 and 8	8 15		
Do. 1st and 2nd white	3 × 9	8 10		
Umea 1st and 2nd yellow	4 × 9	9 10		
Do. 1st and 2nd white	4 × 9	9 0		
Vefsen 3rd yellow		8 0	,,	9 5
[Prepared Flooring.]		s. d.		
Frederickstadt 1st yellow	square 1¼	13 0		
Do.	⅞	8 3		
Do. 2nd yellow	1¼	10 3		
Do. 1st white	⅞	7 9		
Do.	¾	7 3		
Do, 1st yellow grooved and tongued	1¼	12 6		
Do.	1	9 6		
Do.	¾	7 3		
Do. 1st and 2nd do.	1	9 3		
Do. 1st and 2nd white	¾	7 3		
Do.	⅝	4 0		
Do.	½	4 9		
Do. 1st white	1	8 9		
Do.	⅞	8 3		
Do. 1st white grooved, tongued, and beaded	½	4 9		
Do.	⅝	7 0		
		£ s.		£ s.
Sundswall 1st and 2nd yellow	3 × 11			
	per Petg. std.	11 5		
Do.	4 × 9	9 15		
Do.	2½ × 7	8 15	to	9 0
Do. 3rd do.	3 × 11	10 0		
Do. 4 × 9	4 × 2	9 10		
Soderham 4th do.		7 10	,,	8 10
Sundswall yellow balks, 6 and 7in.	load	1 17		
		s. d.		s. d.
Fredrickstadt mouldings	100 foot run	4 0	to	4 0
		£ s.		£ s.
Moulmein teak	load	9 15	to	11 3

◆

LATEST PRICES OF MATERIALS USED IN CONSTRUCTION.

TIMBER.

Teak ....load	£12 0	13 0
Quebec, red pine	3 15	4 15
,, yellow pine	4 0	4 15
St. John N.B. yellow	0 0	0 0
Quebec Oak, white	6 0	6 10
,, birch	3 15	5 0
,, elm	4 5	5 5
Dantzic oak	5 0	6 10
,, fir	2 5	4 5
Memel fir	3 0	4 0
Riga	3 0	4 0
Swedish	2 10	3 0
Masts, Quebec red pine	3 10	5 5
,, yellow pine	3 15	5 5
Lathwood, Dantzic, fm	3 15	5 10
,, St. Petersburg	5 10	6 10
Deals, pr C., 12 ft. by 3 by 9 in.,		
Quebec, white spruce	12 10	18 0
St. John, white spruce	12 10	14 0
Yellow pine, per reduced C.		
Canada, 1st quality	16 10	18 0
2nd do.	12 0	12 10
Archangel, yellow	11 10	13 0
St. Petersburg, yel.	11 10	13 0

Finland	£7 0	£8 0
Memel	7 0	9 0
Gothenburg, yellow	9 0	11 0
,, white	8 0	9 0
Gefle, yellow	10 5	12 10
Soderham	8 10	12 0
Christiania, per C., 12 ft. by 3 by 9 in. yellow	10 0	12 10
Flooring boards, per sq. of 1in., first yel	7 6	10 6
First white	7 0	9 6
Second qualities	6 6	7 6
PUMICE STONE pr ton	6 0	8 0
OILS, &c.		
Seal, pale....per tun	37 0	37 10
Sperm body	84 0	85 0
Cod	39 0	40 0
Whale, Sth. Sea, pale	37 0	37 10
Olive, Gallipoli	50 0	0 0
Cocoanut, Cochin, ton	42 10	44 10
Palm, fine	39 10	0 0
Linseed	39 10	0 0
Rapeseed, Eng. pale	44 10	44 15
Cottonseed	29 0	35 0

METALS.

LEAD —

Pig, Foreign	per ton	£18 15 0	£19 5 0
,, English W.B.	do	20 5 0	20 15 0
,, Lead Co.	do	20 5 0	20 15 0
,, Other brands	do	19 10 0	20 0 0
Sheet Milled	do	20 10 0	0 0 0
Shot, Patent	do	21 0 0	21 10 0
Red or Minium	do	19 15 0	20 10 0
Litharge, W.B.	do	0 0 0	0 0 0
White Dry	do	3[illegible] 0 0	0 0 0
,, ground in oil	do	0 0 0	0 0 0

COPPER:—

British—Cake and Ingot	per ton	£69 0 0	70 0 0
Best Selected	do	71 0 0	0 0 0
Sheet	do	75 0 0	78 0 0
Bottoms	do	78 0 0	80 0 0
Australian	do	69 0 0	73 10 0
Spanish Cake	do	0 0 0	0 0 0
Chili Bars	cash	63 0 0	64 0 0
,, refined ingot		6[illegible] 0 0	73 10 0
Metal Sheathing and Rods	per lb.	0 0 6⅝	0 0 6¾

◆

Trade News

◆

WAGES MOVEMENT.

THE SHORT TIME MOVEMENT IN THE LONDON BUILDING TRADES.—The nine hours' movement, which proceeded with such apparent success during the early part of the year, would appear (says the London correspondent of a Sheffield paper) to have collapsed for the want of pecuniary support. Almost every man in the trade desires the nine hours work per day, but as payment by the hour is the rule in London, comparatively few appear willing to make a present sacrifice of six hours' pay, or 4s. per week, for a possible future benefit, and hence the lack of pecuniary support rendered to the committee who undertook the movement. The committee, however, are not disheartened, and being composed of the best and most intelligent men in the trade, they are resolved to renew their efforts at the earliest opportunity.

THE AMALGAMATED ENGINEERS AND THE PARIS IRONFOUNDERS.—The ironfounders of Paris having been on strike for several weeks for an advance in wages, weekly instead of monthly payments, and the abolition of piece-work, overtime, and Sunday labour, the executive Council of the Amalgamated Engineers entertained an application from them for pecuniary aid, and having satisfied themselves that the cause was one deserving of support, the branches of the society were consulted as to allowing the council to place a 2d. levy upon the members. The result was that 7,045 voted for the levy, and 557 against. The levy was therefore made, and the amount raised, £254, has been paid to the delegate from Paris.

◆

TENDERS.

BRIDLINGTON.—For the erection of tower and spire, Holy Trinity Church, Bridlington:—

Rennard	£1400

CAMDEN TOWN.—For the erection of stables, living-rooms, &c., in Camden-road, for Dr. Andrews. Mr. H. Spalding, architect, 1, Bloomsbury-place, W.C. Quantities supplied:—

Brass	£795
Beaves	729
Phillips & Son	715
Carter & Son	675
Woods	6 0
Patman and Fotheringham	594
Scrivener & White (accepted)	573

CITY.—For alteration to a warehouse, Wood-street, City, E.C. Mr. Herbert Ford, architect.

Henshaw	£470
Kiddle	443
Dr ss	438
Shaw	394
Conder	378
Browne and Robinson (accepted)	362

DERBYSHIRE.—For alterations of and additions to farm buildings at Cliff-park and Mansell-park, Hulland, Derbyshire, for Mr. J. C. B. Borough. Mr. Sugden, architect, Leek:—

Smith (accepted)	£965

DERBYSHIRE.—For new farm-house and buildings at Carr Hall, Derbyshire, for Mr. J. C. B. Borough. Mr. Sugden, architect, Leeds. Quantities supplied:—

Smith (accepted)	£2324

HAMMERSMITH.—For the rebuilding of Infant's school-room, for the Broadway Congregational Church, Hammersmith. Mr. H. Spalding, architect, 1, Bloomsbury-place, W.C.:—

Scrivener & White	£354
Adamson & White	322
Bird	330
Braithwaite	330
Adams	3 6
Woods	3 5
Chamberlain	324
Hanks (accepted)	270

KENT.—For the erection of Public Hall at Bexley Heath, Kent, for the Directors of the Bexley Heath Public Hall and Institute Company (Limited) (First contract. Mr. Joseph Hewitt, architect. Quantities supplied.

W. Atkinson	£1367
J. N. Faithorne	1250
Harrison & Sons	1187
Rhodes & Roberts	1179
J. Pollard	1145
Charles Bowler	1092
R. & J. Butler	4085
Nightingale	1053
J. Kirk	1047
R. Lonergan	1025
T. A. Mulliner	1020
Parsons Telling	1019
London Building Company (Limited)	997
T. Peck	995
Thomas Blake	915
Arrived too late	
J. R Willis	1038

LONDON.—For the erection of a building, No. 3, Bartholomew-lane, E.C., for the Estate Company (Limited). Mr. E. A. Gruning, architect. Quantities supplied by Messrs. W. R. Gritten & Son.

J. and J. Coleman	£9260
Mansfield & Price	9130
Ashby & Sons	9050
J. & C. I'Anson	89 0
Wm. Brass	8893
Holland & Hannen	8873
G. Trollope & Sons	8684
Hill, Keddell, & Waldram	8680
Wm. Henshaw (accepted)	8475

NEWINGTON (SURREY).—For the erection of Holy Trinity Rectory. Henry Jarvis & Son, architects:—

Shapley & Webster	£1985
Baguley	1797
Colls & Son	1797
Downs	1790
Henshaw	1762
Thompson	1760
Tarrant	1743
Marsland & Son	1735
Shepherd	1730

POTTON (BEDS).—For the erection of a dwelling-house at Potton, for Mr. J. Felts. Mr. Usher, architect, Bedford.

Knight & Boston	£ 197 16 0
Brown	180 19 6
Haynes	178 10 0
Corby & Son	174 16

THE BUILDING NEWS.

◆

LONDON, FRIDAY, AUGUST 19, 1870.

DECORATION OF S. PAUL'S.

NO work of the present century can compare in its possible influence upon the art of the country with the proposed decoration of S. Paul's Cathedral. For good or for evil this will in importance eclipse all others—that is, supposing the enormous sum proposed to be raised be really collected. The state of S. Paul's Cathedral, the finest building of its kind and date in Europe, has doubtless been a disgrace to London and the whole nation. If well spent, no sum of money should be grudged by this enormously wealthy city to complete this magnificent work; but when such a sum as a quarter of a million is talked about, it behoves all whose voices can be heard and whose opinions are worth hearing in the matter to exert themselves in endeavouring to prevent any avoidable mistake in so serious an undertaking. If we look round and consider all the buildings upon which much has been expended in decorative work in this country, we cannot help feeling considerable misgivings. The piecemeal adornment of the Houses of Parliament by men of different talents, tastes, and principles has resulted in the production of some fine pictures, though of very unequal merit, all of which might be separated without damage to themselves or the building whose walls they cover; but as a specimen of decoration it affords a good example of what should not be done—as a salutary warning against great expenditure without competent and adequate design. If the decoration of S. Paul's is to be a success, it must be, in outline at least, the production of one brain, whoever is employed to carry out the detail, to paint the pictures, or design and execute the mosaics, and, perhaps more important still, draw and paint the glass. Whether this is executed in England or Bavaria, every detail should be studied and controlled by the master-mind who is to direct the whole. Have we such a master-mind among us as to be properly intrusted with so great a work and fitted to deal with such sums of money? In answering the first part of the question we must not forget that it is not only the adornment of S. Paul's that is contemplated, but its adornment in honour, to a great extent, of its great architect, and so, of course, as far as his mind can be discovered, in accordance with what he would have wished done if he had lived to do it. Now, so far as the decoration has gone at present, not only have the designs of the original architect not been carried out, but important parts of his work—one upon which his only memorial was inscribed—have been uselessly tampered with or destroyed. The fine screen which used to support the organ, and the excellent iron grilles on either side of the Sanctuary, were demolished for no earthly object whatever except a false taste—an outrage which could only have been permitted and committed by a total disregard for and possible dislike of the art of Sir Christopher Wren. "Oh! but," some one will say, "if this grand design in contemplation is to be realized, the present Cathedral architect will not be permitted to destroy or innovate—in fact, a new regimen of conservatism has evidently set in, for the grilles are to be replaced and a new screen worthy of the place is to be erected." One would be inclined, however, to question whether any one so worthy could be placed there as that erected by the architect himself. Still, granting all this, before any of the money subscribed is spent, we ought to know for certain whether Mr. Penrose, under the control of any committee, is the right man to do this vast work. If so, he certainly ought to show upon paper, with a sufficient amount of detail to enable the public to judge of his fitness, what his designs are. The subscribers to the Fund and the citizens of London have a right to know what they are giving their money for, and what is to be the fate of that building which is justly the pride of the metropolis.

As far as the finances are concerned, the episode of the Wellington Memorial, as shown by us last week, offers a warning. Surely, before being intrusted with the supervision of an expenditure of £250,000, or anything like it, the architect should show distinctly upon what grounds he certified the large payments to Mr. Stevens, amounting to considerably more than his original contract for the complete work. If the excuse is to be allowed that artists who have gained a certain position have other commissions to execute, though that very position itself may be to a great extent due to their public employment, it will be far better to give the work to younger artists, and bind them over to take no other commissions till the work in hand is complete. We believe, however, that this financial view of the case is by no means the most serious; waste of money and time are most vexatious, and, as far as foresight can prevent it, all care should be taken to do so before the work is begun. But however much money may be squandered—however much time wasted—if the subscribers and country get a worthy return for their money and patience in the end they will be satisfied and not grudge the loss. No saving of money or time will compensate for inefficiency of work or feebleness and badness of design. It is here we have the greatest misgivings, which nothing but full drawings of every part will do away with. We know nothing of any of the gentlemen spoken of as likely to be employed calculated to inspire us with much confidence. If there ever was a case in which employers had a right—and more than that, a duty—to see what they were going to pay for before they subscribed their money, it is this decoration of the Metropolitan Cathedral.

"Si monumentum requiras circumspice." If you want a hint of how the whole thing may be managed, go and look round for yourself. If any one will take the trouble to see what has already been done, he must be a sanguine man if he has no misgivings as to the future. First, there was the needless destruction of ancient features above mentioned; then came the decoration of the sacrarium, with its ill-drawn, spiritless, grisaille painting and sham recessed panelling. We are quite aware that imitations in paint of various materials and constructions have been in use in all times, though very seldom in the best examples; but surely the very worst species of imitation is the feigning of sculpture, mouldings, and panelling. We should say this even if Wren himself had so designed any of his decoration. If nothing better can be done with the domes surmounting each bay of the roof than to cut them up and reduce their apparent size by this sham lacunation, it is a grave question whether they had not far better be left plain.

Lastly, we have the specimens of mosaic work. These, as far as material is concerned, are excellently done; but what can be said of the designs? Isaiah is the picture of a man suffering from very short sight trying to make out an inscription on a tablet, and attended by two angels with their wings cut square to fit them into the place. S. Matthew is better; but there the angel seems to be seated on the edge of the arch, and so appears to be slipping down in a most uncomfortable manner. These things show plainly enough that if anything like the amount mentioned is to be spent to any advantage, greater art powers than any at present exhibited will be required Does the present staff possess it? If so, let it be shown before the expense is incurred, and let an opportunity be given to the subscribers and public of judging the fitness of the architect and artists and the goodness of the designs. If they can show such a series of decorations as to satisfy the reasonable expectations of the people, well and good. We may be sure that the drawings will be none the worse, nor the decorations, as a whole, less considered, through their being prepared beforehand with a view to public exhibition and criticism. The decotion of S. Paul's, though practically in the hands of the Dean and Chapter, is really a national affair, interesting alike to those liberal persons who are subscribing large sums of money and the thousands who, though many of them unable to contribute to the funds, look upon S. Paul's as the glory of London. So little has been done successfully at present in this matter of decoration that there is doubtless great difficulty in deciding who shall do such a work as this. The case of the Houses of Parliament has demonstrated the absurdity of picking out a certain number of celebrated painters, both on the ground of expense and taste. If there ever was a case in which an unlimited competition was called for it is this. These matters have been much more studied of late years than they were in old times. Who shall tell whether among our own architects or other artists a designer to rival M. Lemeire might not be found, who would prepare a series of iconography and designs which should make the decoration of S. Paul's an epoch in art, and not what it threatens to be, and what most of our attempts at decoration on a large scale have hitherto proved to be—a disastrous and costly failure? Of this we are quite certain, that a moderate sum spent in premiums for the three or four best sets of drawings would be well spent, and that really in the end such a course would be as economical as wise and provident.

◆

SUNDRY DECORATIVE WORKS AT THE KENSINGTON MUSEUM.

(Continued from page 93.)

THE staircases and corridors, which we have mentioned as being fit positions for decoration, need not fear to do injury to, or to be injured by comparison with, such objects as the contents of this museum. Accordingly, we find that such spaces have been selected for much sumptuous display of the kind. The large staircase leading up from the north cloister to the picture-galleries is a specimen. Like most of the art fostered at South Kensington, it is highly eclectic—the result of careful study of ancient precedents. One's eye is thus caught at once by the rich and delicate ceiling and pleasantly reminded of those of Moorish construction. The wooden construction is properly revealed and decorated, each rafter being bracketed down to the corbels of the cornice. A raking portion is carried round the walls, and an oblong space in the centre is level and divided into three panels, the central one square, and a narrow oblong one at either end. A delicate octagonal gilt metal grille occupies the main portion of the space of the central square panel. This being over the gaselier provides good means of ventilation. Carved pendants mark the points of intersection of the main beams of this ceiling. The treatment in colour is rich and delicate—gold and white and grey, with the ground of the panels dark. The general effect is undoubtedly good; and it is only when we come to investigate closely the details that we are disappointed. Thus, then, we find that in a most costly work all that has been spared has been thought and invention on the part of the designer; that one monotonous pattern fills the whole of the numerous panels; and that the commonest Greek fret is the invariable border around them all. And, lastly, but not least, we must consider open to criticism the fact that this ceiling surmounts plain maroon-tinted walls with a simple chocolate dado. Herein is the eclectism weighed and found wanting. A rich Moorish ceiling is always found crowning an apartment with both elaborate walls and pavement in harmony. Here this ceiling looks but one of the many isolated specimens of beautiful work with which the museum abounds. We need not further point to the discrepancy between the Oriental framework and the Renaissance ornamentation of this ceiling; what we have said we think may suffice to show that in this, as elsewhere, the general character of the work of the Department is consistently carried out in inconsistency. We cannot, however, quit this staircase without some notice of its prominent feature — the large semi-circular-headed window above the landing. It is filled with a Renaissance architectural composition, with pilasters and baluster-like columns enclosing sundry pictured panels—a pair of forcibly drawn and equally forcibly coloured lovers clasping hands in the centre, and an incongruous and incomprehensible mass of ornamentation in the arched head above. The details throughout are of the stupidest nonsense ornament of the nonsensical style that has been selected. The sham projections and perspectives are palpable absurdities, and the general effect spotty and unsatisfactory in the extreme. The ordinary staircase and its cast-iron railing again proclaims the borrowed nature of the far finer plumage overhead.

We are not, however, confined in this museum for studies of decoration to these eclectic ones of its decorators, but many valuable collections of drawings of the most renowned specimens in the world are to be found upon its walls or in its revolving cases of frames, and to these we intend occasionally to refer for the benefit of our readers and students of this branch of art. In the vestibule of the portion of the museum in which the Meyrick collection of armour is displayed, are now hung some exceedingly interesting copies of the fresco paintings which have recently been discovered in the crypt of the church of S. Clemente at Rome. To these we desire to direct attention, and for that purpose we append the following notes made upon some of them, which will give an idea of their character and value :—

No. 1 is a male bust—unknown—of old classic character, date about 300 A.D.; sketchily but clearly drawn, features of full Roman type, naturally and not conventionally expressed. No. 2 is a female saint—unknown—with nimbus. Date beginning of fifth century; though in some degree resembling the last example, less careful and more conventional. No. 3 is The Crucifixion, with the figures of the Virgin Mary and S. John, believed to be the earliest known mural painting representing this event. Date about 646-50 A.D. Very rude art—almost all classical character lost, and conventionality substituted, but not as yet fully developed. Similar in character, but interesting from the composition of its separate subjects, is No. 4, which represents the Marys at the Sepulchre, the Descent of our Lord into Hades, and the Marriage of Cana; the last subject imperfect, but recognizable by the Architriclinus, or Ruler of the Feast, standing near our Lord. Date probably about 650 A.D. Below these are hung a painting in tempera, on canvas, of a standing female figure, with the inscription "Dionysas in Pace," copied from another fresco in the cemetery of S. Callistus, supposed to be of the second half of the third century, and an oil painting on canvas of a robed female figure with extended arms, probably S. Cecilia, copied from a fresco in the cemetery of S. Callistus, part of the Roman catacombs, the original of which is a work of the seventh century. These, though coarse and inartistic, are very interesting by way of comparison among themselves and with those of S. Clemente. In the former, the classic feeling in the figure and the freedom of imitation of nature in foliage, with the bird in the background, are manifest; whereas, the latter, by the diapering of the robe and its jewelled borders—in themselves, by-the-way, tasteful both in colour and design—evidence the nascent Christian style of ornament, while the rude head betrays a reminiscence of Pagan types. No. 5. The Assumption of the Virgin Mary—the date of which appears to be fixed at about 850 A.D., by the introduction on the spectator's left hand of Pope Leo IV., apparently as a personage then living—shows a panelled ornamental dado about 4ft. high, with rude scrawls of vegetation in brown upon the panels, which are of a yellowish-white ground, defined by a black line, and a vemilion red band is carried round them. The principal subject occupies an oblong space about 6ft. long by 3ft. high, with a semi-circular niched addition to the centre above. The Virgin is seen with extended arms upon a sepulchred rock, and our Saviour, surrounded by a Vescica form, borne by four angels, appears in a starry firmament ready to receive him. The twelve apostles are ranged six upon either side, with the arm of one of them stretched upwards, as if pointing, but with the evident aim of aiding the symmetry of the composition; to carry out which further the figure of the Pope terminates the picture on one side and a corresponding saint performs the same office on the other. The figures are in sober-coloured costume of white robes, with an occasional yellow or brown mantle, and are thrown up by a vermilion wall and dark green sky above. Rude as is the drawing throughout, and conventional the arrangement, the effect is solemn and dramatic, and the composition is not without grace, particularly in the treatment of the Angelic supporters of our Lord. No. 6 is the Translation of the Relics of S. Clement, by Pope Nicolaus, from the Vatican to the Basilica of S. Clement, a votive offering, given by Maria Macellaria, date about 900 A.D. The picture, though highly interesting, is in a degraded style of art, with but little of dramatic effect. The superior dignity of the robed prelate, seated at the shrine which is to receive the relics, is clumsily conventionalized by his figure being of a larger size than the rest, and, though his hands are extended as in adoration, he is looking straight out of the picture and away from those who are inviting his attention. Acolytes are bending under the weight of a litter, upon which the body of the saint is borne, and others are swinging censers behind, and a crowd follow with the cross and banner-bearers of the procession, and the whole, by the sloping line given by their heads against the sky, seem sliding against the frail temple, which they appear as if they would overwhelm. A remarkable ornamental band runs below the picture, and a dado below that, the motif of the decoration in the former looking like rich Byzantine, and of the latter of meagre Classical work. In Italy, during all the ages of Christianity, the remnants of Classic art, always among the people, modified their ideas and their practice, and we continually see a struggle going on between the elements of Classicalism and Mediævalism, but this early instance of the kind is one of special interest.

There are also copies of other frescoes at S. Clemente than these we have noted, but we have not time upon this occasion to do more than refer our readers to them; we may, however, upon another opportunity, return to them, as well as to the other stores for the decorative student which are to be found in this most valuable museum.

◆

WROUGHT IRON CRANES.—III.

OUR two preceding articles on this subject were confined solely to a practical description and illustration of the ordinary method of constructing wrought-iron cranes, and we reserved, for a third and concluding article the question of their theory and scientific analysis. It has been already stated that mathematical formulæ and algebraical equations are not suitable for those particular examples of construction in which the different parts are inclined to one another at angles which not only vary among the parts themselves, but are also dissimilarly inclined to the horizontal. An example of our meaning is given in Fig. 2, which represents a skeleton elevation of a wrought-iron bent crane. In practice, the outer and inner flanges are curved as shown by the dotted lines, but they are considered theoretically to consist of a series of straight lines joining the several points where they are connected with the diagonal bars forming the web. These points may, in reality, be either pins or rivets, but bearing in mind to what tremendous jerks and vibrations cranes are subjected, there would not be any particularly valid reason for employing the former kind of attachment. After a time, pins must work loose; rivets never do. To determine the strains upon the crane represented in Fig. 2, which is supposed to be loaded only with a weight at its peak L, we start from the fundamental principle that governs the distribution of strain upon two separate members inclined at different angles to the horizontal, and acted upon by the same weight—to speak dynamically, by the same force. This principle, which it is necessary thoroughly to understand, will be best explained by a reference to Fig. 1. Let A C, B C, be two bars inclined to the horizontal line F G at angles respectively of 60° and 45°, and supporting a weight W at their junction C, which let us take equal to 1 ton. By the method of resolution of forces, construct the triangle C D E, and make C D = 1 ton. Draw D E parallel to B C, then D E will equal the strain upon B C, and E C that upon A C. If these strains be measured off upon a scale of two tons to the inch, which is the scale upon which C D is drawn, they will be found to equal respectively 0·50 and 0·71. It is not difficult to prove that these values are in the ratio of the cosines of the angles which the bars make with the horizontal line F G. By the principles of trigonometry we obtain in the triangle C D E the proportion D E : E C : : sine E C D : sine E D C. But the angle E C D is the complement of the angle E C F, which in the diagram was made equal to 60 degrees; similarly, the angle E D C is equal to the angle D C B (Euclid, prop. xv., book 1), which is the complement of the angle B C G, which is equal to 45 degrees. As the sine of any angle is equal to the cosine of its complement, if we call the strain upon the bar B C = E D = S, and that upon A C = E C = S^1, we have $S : S^1$: : cosine 60° : cosine 45°. Substituting the values of these in the equation, we find 0·5 : 0·71 : : 0·50000 : 0·70710, a sufficiently close approximation to prove the accuracy of the diagram.

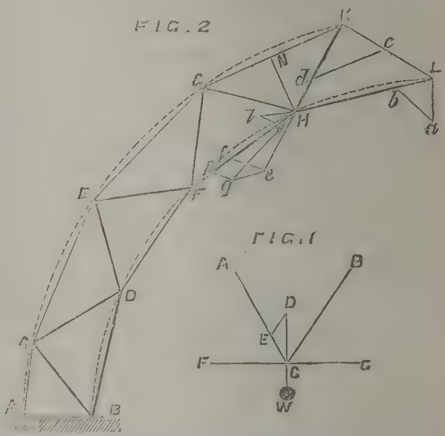


FIG. 2

FIG. 1

A similar method is employed in deducing the strains upon the crane in Fig. 2, with the exception that, as we proceed, the resolution of the different forces becomes rather more complicated, but not to such a degree as to hinder any one from mastering the subject with care and attention. At the same time, it is not to be supposed that a mere casual perusal of our article is sufficient to enable our younger readers to comprehend the matter thoroughly. Far from it. They must study—not merely read—it, and work out for themselves the diagrams to a conveniently large scale. For the sake of simplicity, we will suppose that there is a weight of one ton only at the point L, in Fig. 2. The advantage to be derived from this is that when once the strains due to a weight of one ton have been ascertained, all that is necessary to obtain those on another crane similar in design but loaded with a different weight is to multiply them by the constant ratio between the original or standard weight and the one in question. It must not be forgotten that any alteration in the design of the crane, such as changing the radii of either the inner or outer flanges, or the angle of inclination of the bars, will altogether vitiate the calculation. To return to our diagram in Fig. 2. Let L a equal one ton, supported at the front L. How does this produce strains differing in character and intensity throughout the whole structure? In the first place, the weight being supported at the connection of the two bars K L and L H must strain both of them, compressing the latter and extending the former. The parts in compression are shown by thick black lines, those in tension by fine ones. From the point a, draw $a\ b$ parallel to the bar K L, meeting the chord of the part L H of the lower flange in b. Then, measured on the same scale, $a\ b$ will give the strain upon L K, and L b that upon L H, and they are respectively equal to $-$ 1·3 and $+$ 1·05 tons. The sign minus denotes a tensile strain and $+$ a compressive. Leaving this latter strain alone for a moment, let us trace the further action of that upon L K. This is obviously transferred to point K, where it acts upon G K and K H, extending the former, and compressing the latter. Upon K L, plot off K c equal to $a\ b$, equal to the strain upon K L; draw $c\ d$ parallel to K G, meeting K H in d. The lines $c\ d$ and K d will give the strains upon G K and K H respectively, and will be found equal to $-$ 2·15 and $+$ 1·85 tons. Following the strain upon K H, it is transferred to the point H, where it pulls upon the bar G H and compresses H F. If there were no other force acting upon the point H, nothing more would be required to find the strains upon the members G H and H F than to proceed as before. But there is the strain upon L H, equal to L b, to be taken into consideration, and how it also affects the bars acted upon by the strain upon K H. It will be seen on inspecting the diagram that it compresses H F, and also compresses the bar G H, which is, on the contrary, stretched by the strain brought upon it from K H. But it has been frequently mentioned in our articles on constructive subjects that when a bar or part of a structure is acted upon by forces or strains of both tension and compression, the actual strain is the algebraical sum of the two. Thus if a bar have a tensile or minus strain of 7 tons, and a compressive or plus strain of 4 tons, then the actual resulting strain is $(+ 4 - 7) = - 3$ tons. This is just what occurs in the present case, and we thus see how important it is to remember these fundamental axioms. The bar G H is acted on by a tensile strain in the direction of K H and a compressive one in that of L H. It is the difference, therefore, of these two which is the strain really affecting the bar.

There are two methods of resolution by which these strains on G H and H F may be determined. One is by proceeding as has been already done, taking care to take the algebraical sums of strains of a different character where they are so, and the other to first find the resultant of the two original strains, and then completing the diagram of forces. Let us consider the former method first. Produce K H to e, making H e = K d = strain upon K H. From e draw $e\ f$, parallel to G H. Measure $e\ f$ and f H, and these will represent the strains upon the bars G H and H F, due to that transferred to the point H by the bar K H, and will be $-$ 1·0 and $+$ 2·4. Now for the other strains, produce L H to l, making H l equal L b equal the strain upon L H. From l draw $l\ n$ parallel to G H, and $l\ n$ and n H will be the other strains upon G H and H F, and will scale $+$ 0·5 and $+$ 0·63 tons. Summing up, we obtain the total strains upon these parts of the crane to be as follows:—Upon G H $(- 1{\cdot}0 + 0{\cdot}5) = - 0{\cdot}5$ tons, and upon H F $(+ 2{\cdot}4 + 0{\cdot}63) = + 3{\cdot}03$ tons. By the second method, the resultant of the strains of K H and L H must be first ascertained. Produce K H to e as before, draw $e\ g$ parallel to L H, and equal to L b. From g draw $g\ h$, parallel to G H. Then $g\ h$ will be found, on measurement, to equal $(ef - l n) = - 0{\cdot}5$, and h H to equal $(\text{H}\,n + \text{H}\,f) = + 3{\cdot}03$ tons. At the point G there are also two forces acting, namely the strain due to the bar G H and that to K G. The resulting strains can easily be determined upon the parts G E and G F by either of the methods we have just investigated. We cannot spare space to go through every strain, nor is there any necessity, as the determination of the others is simply a repetition of what has been already done. Those who desire to thoroughly understand this operation must make a good large diagram of Fig. 2, and work out the whole problem for themselves, taking care to tabulate the strains upon each bar separately, so as to perceive how they accumulate from the free to the fixed extremity of the crane.

Although this method of calculating strains is perfectly accurate enough for all practical purposes, yet, as it is a consecutive one, it is advisable to check the strains in the flanges at intervals. This may be readily done by very simple formulæ. For example, the strain upon the bar K G has been found by the diagram to be equal to $-$ 2·15 tons, and it may be checked as follows. It is manifest from the principle of moments that the strain at any point multiplied by the leverage with which it acts, will be equal to the weight at that point, multiplied also by the leverage with which it acts. The strain on the bar G K acts with a maximum leverage of N H, equal to 3·5 feet, whereas the weight at L acts with the horizontal leverage of H a, equal to 7·9 feet. If S be the strain required, L its leverage, W the weight, and L′ its leverage in the general formula, $S = \dfrac{W + L'}{L} = \dfrac{1 + 7{\cdot}9}{3{\cdot}5.}$ From which we obtain $S = - 2{\cdot}2$ tons, which checks the accuracy of the calculation by diagram. Great care must always be taken in calculating by diagram, as there is always a tendency for errors to accumulate. One false step at the commencement, if it is not perceived, is perpetuated in all the succeeding operations, and would ultimately cause a very serious difference in the correct values. But by using the method of moments to check the results, no such accumulation can occur, and one is enabled to perceive, as the working out of the diagram proceeds, that the calculations are rightly performed. One or two checks of this kind should always be introduced, as, if the whole operation is effected first, and the strain upon the last flange not found to be correct, the whole work must be gone over again to discover the error.

BUILDERS *VERSUS* ARCHITECTS.

(*Concluded from page* 111.)

SUCH of our readers as may have perused our last week's article may also have seen that the subject is still kept up in our column of "Correspondence." We now briefly conclude our own observations upon it. It is agreed on all hands that the present training of the English architect is very inadequate. Such, however, as it is, it is endorsed with the approval of the Royal Institute, which admits to its highest ranks any respectable man who may have been for seven years a simple practitioner, good, bad, or indifferent. It follows that no proposal to invest its Fellows solely with the function of an arbitrator in building disputes can hold water. If the Institute is strong anywhere it is in the metropolis; but we greatly doubt whether, in a case of building dispute, even a London builder would not prefer the arbitrament of any of our metropolitan building surveyors. These gentlemen are, by the operation of the very rule of professional practice set up by the Institute, better used to enter into the "minutiæ" out of which building disputes usually arise—that is to say, in nine cases out of ten, out of questions of value, questions of trade-custom, and questions of modes or measuring artificers' work. How is a Fellow of the Institute, who, agreeably with the unchallenged dictum of its late President, abstains from questions of money value, to deal as an arbitrator with such questions? He must necessarily take counsel with some building surveyor, who would himself, peradventure, have made a more efficient judge for the final settlement of the dispute. We do not seek to set up building-surveyors against Institute Fellows. Some of these latter are admirably qualified to officiate as arbitrators. We are simply speaking of Institute Fellows as a body: of their entire absence of any special training, as Fellows, for the functions of an arbitrator. In such a precarious profession as that of architecture, a most estimable man may very well have been "seven," nine, or even eleven years "in practice;" and yet all that time have had little or no *practice in building*. This is of course his misfortune rather than his fault; but it is clear he will thus be very unfit for an arbitrator, having nothing but his Fellowship (that is to say, his seven years' "practice") to exhibit as his qualification for the office. Sorry, indeed, are we to observe the Institute year after year maintaining so inadequate a criterion for its Fellowships. It is the hateful opprobrium of a professional corporation, that might do, and ought to do, more to foster and to purify the building trade. It is all very well to be angry with Mr. Ayrton: we question very much whether the right honourable gentleman, with all his faults, is not a Frankenstein of the Institute's own raising!

But we are forgetting our good friends the builders, who will persist in drawing plans for capitalists who wish to build, and who will not repair to the office of the designing architect, design he never so wisely. Well, we cannot for the life of us see why our architectural—or rather our professional—friends should take such umbrage at the act as many of them appear to have done, judging from the angry letters they have written us. Why should not a builder make plans, or even ornamental designs, if it comes to that? There is no mystery or trade secret in the making of such drawings; and there is, moreover—what these irate gentlemen have forgotten—no royal road to the making of such documents. If a man wants plans, but will not have an architect's supervision, we should ourselves advise him by all means to apply to an architect in preference to any one else, simply because the preparation of plans is his special vocation. But if he will not go to an architect, there is no reason why he should not go to any other person who is competent to draw plans. There are many such persons out of, as well as in, the ranks of the professional body aggrieved; and among them it is indubitable our friends will have to include builders. They make the plans, such as they are—possibly very good, probably very bad, most probably quite useless; they get paid for them, and there is an end of the matter. It is not pretended that these erring builders have been officiating as architects. If they do, and at the same time contract to erect the building in question, they remain simply builders, not architects, to the employer who has simply (very simply) engaged them in that dual capacity. If, on the other hand, these incontinent, obnoxious "builders," charged with inserting a foot into the architects' trough, do pretend to officiate *simply* as supervisors of the building they have "drawn," what have our professional friends to complain of? They may term them "builders," if they please; but we should call them "architects," to all intents and purposes—that is to say, they are real denizens of that magic circle in which, if they keep respectable for seven years, they are certain (if they can and will afford four guineas a year) to effloresce as full Fellows—yes, Fellows—of the Royal Institute of British Architects. We should very much like to know how any English architect is at this present writing to get higher up on the architectural ladder than that? As English architects, we put the query with, we confess it, unfeigned sorrow and humiliation.

No: it will not do to throw stones at these plan-drawing builders; not, at all events, while this dreadful war against professional architects is raging in Whitehall-place. If our professional friends can really draw better plans than the builders can, it is well; let them somehow (the Institute knows how—we do not) get the "discerning" building public to see the plans or to appreciate the fact. We have, unfortunately, no other genuine credentials to produce. They do not recognize our special architectship at Whitehall; the public does not recognize it; we have none to show them for their money; no guarantee of our special fitness for plan-drawing; nothing but our—as we think—very superior plans to exhibit. The public never sees them: it will not come—most stupid public—to the Architectural Exhibition; and it goes, as Mrs. Malaprop has it, "promiskerously" to the builders. The architects, ill-employed in these hard times, "swear consumedly" at the incident. Let them ponder for a while at the moral—we trust it has one—of our article.

We began it by sympathising with the writers of the letters we have printed in our columns of Correspondence. In closing it, let us say we have no sympathy with either the builders or the architects who bandy imputations of "scamping," bribery, and foul dealing. These things are, like plan-drawing, peculiar to mortals of every trade and vocation. Their practice, whatever our friends may think, is purely cosmopolitan; by no means restricted, as their letters seem to imply, merely to builders, nor yet to architects.

W. Y.

THEORY OF THE ARTS.

(*Continued from page* 77).

THE æsthetic development of the Middle Ages was high because the intellect, the physical and moral faculties, were governed, and obtained a sort of provisional harmony under the theological or ecclesiastical dominion. Taste—which is strictly analogous to or the same as the moral faculty, inasmuch as both are of a compound character, requiring a judgment of the understanding or reason as well as an emotion or capacity to feel pleasure of some sort—obtained under the social-religious organization of Catholicism a freer exercise than it could possibly have when the intellectual and moral natures are in antagonism, as they had previously been under Roman civilization, and which they were afterwards subject to again when a separation became necessary between scientific progress and the Church, or between intellectual advancement and dogmatism. For about two centuries art reposed upon a generally-admitted system of philosophy, and acquired an expression distinct from all that had preceded it and all that has followed it. Taste, or the feeling for art, is, as I have said, of a complex nature, and always requires the "pre-existence" and "co-existence" of certain faculties of our nature in their free and harmonious exercise. When the intellect is estranged from the moral power, or there is a sort of unreal feeling subsisting between the two; when reason and conscience do not agree, as often with the individual, the capacity for judging rightly, whether in moral actions or in art, is destroyed or rendered useless. No man under such a condition can discriminate right from wrong, the beautiful from the deformed. Art becomes an unreal expression. But as in the individual so in society there is an abnormal or perverted use or agreement of these faculties, often due to improper education. A man judges or conceives a thing wrong or ugly which another believes to be the opposite with the conviction of both the above faculties. This is due to education. His conceptions are perverted in some points from a deficiency of proper training; so it was with the conceptions of the artists of the Middle Ages in respect of the representative arts of sculpture and painting particularly.*

Architecture being an art in which the faculties of abstraction are concerned rather than those of perception and imitation (indeed, itself an abstraction of the mind), excelled. Where the slightest conventionalization is used in the art of the sculptor or carver we find unexampled skill, but not so where the imitation of natural objects is required. Thus in the portrayal of the human figure a low, coarse estimate of physical beauty is the characteristic type met with. Bad drawing and ignorance of perspective show the neglect the imitative arts had suffered. As I have said, the tendency to represent "directly" the object of worship gradually increased, but the religious ideal of the period was too low for the exercise of the higher faculties of conception. Again, the æsthetic sentiment necessary in these arts was quite subjected to the devotional feeling, which in its monastic or ascetic form was totally irreconcileable to art. Between the sixth and twelfth centuries the ascetic ideal of ugliness was supreme, and exercised an unfavourable influence. The veneration of relics of the martyrs and image-worship rather checked the progress of correct and good taste in art than otherwise, because it unduly subjected the material conception to the spiritual or religious ideal of the time. Bodily torture and suffering instead of beauty were associated with holiness; and it may be generally observed that art becomes reflective of the emotional parts of theology of every creed. We find that the spiritual conception of a Supreme Being was not materialized or represented by artists till about the fourteenth century, when portraits of the First Person of the Trinity became common (see Didron) and assumed various degrees of rank till the figure became the central one. The deification of the Virgin arose from the great want felt during this period to materialize spiritual conceptions, and it may be said that the Mediæval conception of the Virgin exercised a beneficial influence, and was probably the highest ideal, as significant of moral charm and beauty, that the artist of the Middle Ages conceived. The great error, however, in the artistic conceptions of the time was in believing there was an impassable gulf between the physical and moral; or that ascetic practices and bodily restraint were necessary to a virtuous life. Gnosticism, for instance, maintained the essential evil of matter, and the propensities of the body were to be subdued. It was under this belief that the hideous and repulsive carvings and representations that adorned the cornices, bosses, stringcourses, and other ornamental accessories of architecture were conceived, as it was a belief in a hell—a religious terrorism that stimulated the religious devotee to works of unparallelled self-sacrifice, cost, and zeal.

Architecture was, *par excellence*, the art of the Middle Ages, the other arts being subordinate to it as accessories. There was a proper relationship or co-ordination between the arts then which frequently at the present day we sadly lose sight of. For instance, it is not rare to find a new modern-fashioned church erected in miserable keeping with the decoration. Exteriorly we get a barn-like, ill-proportioned structure of stone, or, more frequently, a mixture of stone and brick, in a Franco or Italo-Gothic style, built in accordance with the whimsical and crude notions of a leading popular "high-ritual" architect—I do not want to be invidious—while interiorly we find an extravagant parade of fancy brickwork of the most *bizarre* description, the walls and fittings being bedizened to such a degree that all structural harmony and truthfulness is completely destroyed. This want of repose and subordination we never find among the works of the Mediævalists. The reason we do now is pretty obvious, and I shall endeavour presently to explain. Christian architecture properly commenced from the age of Constantine, after the separation from the Western Empire. Two great divisions sprung from Roman art. First, the Byzantine, the style used by all the Slavonic races of Europe, adopted by the Greek division of the Church, and by the Christians of the East, in Asia, Africa, &c., till the Saracens prevailed in the latter parts. Second, the Romanesque, the style which, starting from Roman art, was adopted and practised in the West, and which ultimately developed into the Gothic or Pointed style of the Teutonic races. The distinguishing feature of the first is its domical construction and the circular form of its plans; while the latter style chiefly adopted the rectangular plan of the Roman basilica. I allude chiefly to these two great developments of Middle-Age architecture for the purpose of indicating, the relative values of both in our church architecture of the future. While we cannot do better than follow the style and treatment of the latter branch, or the Gothic art of our own country, I think, nevertheless, we may usefully adapt the plans and constructive peculiarities of the Byzantine churches as even more applicable to the requirements of our modern reformed church. But I reserve this point for a future paper in which the more practical aspect of this essay will be considered.

It is to the Romanesque, or Gothic of the West, from which were developed the Pointed styles of the thirteenth and fourteenth centuries, that we must look for the varied elements and expression of Mediæval conception and feeling. Here are harmoniously expressed abstract and conventional forms vieing with the consummate art of the Greeks, after which it must be regarded as the second great period of architectural excellence. Borrowing all that was noble in construction of the arched astylar system of the ancients, the Middle-age architects added variety and vigour, and impressed their own character, thought, and feeling upon the architecture of this period. Comparing the Greek period of excellence with the Mediæval, one reached the acme of material perfection as expressed in the trabeated construction, the other the more varied poetry of arched construction,—one was material wrought out by pure intellect, the other was material wrought upon by the moral and spiritual faculties, under a Divine inspiration. In analysing the characters of the two styles of art, they are perhaps nowhere better expressed than in the mouldings of the two periods. In Greek moulding there is a rectangularity and inflexibility of expression, denoting a decision of thought, and at the same time a delicacy of refinement in the curves that is more indicative of intellect than feeling. In the Gothic mouldings, on the contrary, there is a more playful variety of curves and angles, the latter being oftener obtuse or acute than rectangular, displaying a greater regard for pleasing variety than for decision. The same inflexible rigidity of character noted in the mouldings is also found in the general forms and plans of Greek buildings. The plans of Mediæval structures are, on the other hand, rich in outline, and are, on the whole, exceedingly characteristic of the versatility of the elements and races which combined to form Middle-age society. I think the styles known as the First and Second Pointed, or the "Early English" and "Decorated" of Rickman's nomenclature, express most completely the intellect, spirit, and feeling of the Middle Ages, and are the purest architectural embodiments of this period, but the numerous examples and works render it unnecessary in this essay to particularize the peculiarities of a style so well understood by the readers of the BUILDING NEWS.

---

* *Vide* the painted glass.

From the fourteenth century we begin to trace the approaching disorganisation of Catholicism, or that theological system that had so long held dominion. The decomposition of the system was, then, brought about by its very elements. Thus the metaphysical spirit, or reason, became too critical and powerful for the theological spirit; while a severance was commenced between the spiritual and temporal powers. Hitherto they had subsisted together under a philosophy, but this could no longer preside over both. An inevitable dissolution became imminent between sacerdotal authority and political existence, while the gradual increase of an industrial and scientific spirit made it still more necessary. Comte observes that at this period four evolutions began to characterise society—the industrial, æsthetic, scientific, and philosophical—elements destined simultaneously to prepare a spiritual reorganisation of society. Now, it may appear strange that in all preceding periods the fine arts (Greek perhaps excepted) were essentially confined to the higher classes, but it was so, and the fact only illustrates the basis upon which the arts reposed. Slavery and war were generally the state of society. But at this particular epoch industrial progress gave an impulse to art—at least served to popularise it, by its tendency to develope among the lowest classes habits of mental activity under which alone the æsthetic action can be understood, and also a sense of ease and security so necessary for the enjoyment of art. But at this very epoch, early in the fifteenth century, the decomposition of the theological and progressive elements of society commenced, a revolutionary state of society set in, and the industrial spirit, engaged upon more preliminary and provisional work, rendered little aid to æsthetic action, which was thus deprived of direction or social destination. The history of art for the last five hundred years sufficiently indicates this revolution in the moral and intellectual world, an analysis of which I will show in the next paper. G. H. G.

FRENCH SUBURBAN VILLAS.[*]

(*Concluded from page* 114.)

RETURNING from this long digression to our villa, we find that it is faced in about equal proportions with brick and stone, the broad surface of the former beneath the main cornice being relieved with diamond bands of a darker coloured brick. It would have united the turrets more thoroughly with the general design if the brickwork here had been carried round the turrets, as it is on the lower stage of the front; but I presume the wish of the designer has been to make the corner towers as handsome and presentable as it was possible on account of their prominence. For the same reason the central portion of the façade is of stone.

In the design of the door much taste has been exhibited. The feeling, on the whole, is quite Gothic. Like the later Gothic doors, it is flanked on each side by buttresses square in plan at first and then set anglewise above the sets off, in which form they continue up to the next storey, and are crowned with small elegant carved shafts. It may be urged that these buttresses are mere excrescenses serving no legitimate purpose, and, looking at them in a matter-of-fact way, this is no doubt true. But our art includes imagination as well as reason amongst her clients (a difficult customer to satisfy, by the way), and to meet her views these projections, I maintain, are perfectly legitimate. We instinctively associate the idea of strength to a doorway: and however strong it may really be, if it does not look so and does not boldly assert itself above the rest of the features of the building, it fails to satisfy the imagination.

The head of the door is a depressed arch, very faintly pointed. The architrave mold is somewhat Gothic in character, but projected forward slightly from the wall to secure a definite line of shadow. A label mold surrounds the head, terminating against the buttresses. A very effective billet mold ornaments the architrave, having within it a running band of foliage. The introduction of the female head in the centre of the arch relieves the label mold from the unpleasant effect produced by the depressed point. On each side of this head two mouldings curve upwards, and uniting in the string-course above pierce through it and develope into a finial, of which more hereafter. The spandrels between the arched head and the string are filled with carving, consisting of rich foliage leaves and delicate scroll work. The wood doors are quite in harmony with the light and elegant character of the door-case, the upper parts being glazed between the collonettes or balusters.

The upper part of the façade above the entrance door is a most pleasing composition. The two windows coupled together in one frame, although common-place enough to the idea, display so much taste in the details as almost to reconcile one to the liberty taken with the curved pediment and the sprawling shield in the centre, which, whatever may be thought of it in an æsthetic point of view, quite fulfils the aim of the architect in carrying the eye up, and breaking the rigid lines of the composition. There is, I admit, much here which could not be defended on strict principles of classical architecture; but it would not be fair to judge the design in that way, for, as I observed at the commencement of my remarks, the whole affair is a compromise between the rival styles, and the object in view is, not a Greek villa nor a Gothic castle, but an elegant house, which may appeal to an educated sense of beauty. The finial above the doorway mentioned before is used to attach some ornamental foliage to, in the shape of a large crocket, which spreads itself out on each side, covering the dado under the windows. There is much playfulness and resource shown in this hint taken from the Gothic.

The grande lucarne above these coupled windows may be styled a Gothic dormer, carried out with Italian details. The three finials surmounting it are elegant and well designed. In order to relieve the harshness of the angle formed by the sides of the lucarne and the pediment below, small side buttresses are introduced, which, first sloping slightly outward and then curving at the foot, soften off the upright line into the slope below, and also cover the gap left between the nose of the pediment cornice and the dormer. The window opening is within a slight recess covered with a segmental arch, no doubt intended as an echo to the curved line of the window pediment below.

In the enlarged view of one of the angle turrets the defects of their design come out more prominently. The ornamental shields and oval panels, stuck on like pictures hung on a wall, display a lack of invention and poverty of resource which is strangely at variance with the ability shown in the rest of the building. The architect has more wall space than he knows what to do with—a thing, alas! *we* are rarely troubled with. The object has evidently been to give as much breadth as possible to the towers, but to have left them without anything would have looked bald and desolate, and so he hangs his architectural pictures.

The treatment of the interior features of the villa is Classical throughout, excepting in the grand staircase, where a Mediæval feeling is shown in the carved lion and shield at the foot of the stairs. The upper portion of the stairs is lit from a large skylight in the roof, through an opening in the landing on the first floor.

Leaving this villa, with its spacious grounds, to represent the first of the three classes into which M. Daly divides his houses, we pass to a house situated in the Avenue de l'Imperatrice in Paris, and take it as a sample of the *deuxieme classe.* This villa is well situated, having, in addition to the frontage to the avenue, a front to the Rue de Bellevue, while on the other side it faces some gardens. The entrance is from the side street into a spacious court, having the house on one side and stables on the other. The house is a square block, with a projecting portion at one corner containing the grand stairs. The arrangement is compact and good. Entering the house you first arrive at a corridor which, going straight forward, conducts you to the grand salon, with the petit salon entering from it. To the right of the corridor is the salle à manger, to the left the library. These are all the apartments on this floor except the conservatory, the arrangement of which is worthy of notice. Extending as it does completely along one front of the villa, it serves to unite the apartments together, having large openings leading into it from both the salle à manger and the salon, so that in the case of company the rooms become *en suite* without the inconvenience of folding doors. The situation of the staircase in this example is peculiar, and under the circumstances is, I think, a happy thought on the architect's part. By keeping it clear of the main body of the house he has secured the whole space contained within the four outer walls for his rooms free from interruption. The stable buildings are placed at the back of the land, and form an oblong block with a recess in the centre of the front. The coach-house and stable are at each end, with harness-room and staircase in the centre. The recessing of the front shows thought on the designer's part, as the whole width is not required for the harness-room and stairs he has thrown the space into the court, and by breaking up the elevation of the building has given it greater architectural interest. Passing up to the première étage we find the main corridor as below leading to the master's bedroom, a large room with four large windows. It communicates with the bathroom. To the right of the corridor is the young lady's room, with a large armoire or wardrobe attached, a most useful adjunct for the dresses of a girl of the period, while beyond is the chambre de reception or spare room for guests. Above the stable and coach-house are a number of bedrooms and dressing-rooms for servants. The second-floor contains a spare chamber for guests, rooms for the domestics, and a linen store. In addition to these rooms there is a large billiard-room.

The elevation of the villa, which fronts the avenue, is an elegant example of French-Italian. It is divided into three parts, the middle compartment projecting slightly before the rest, and containing two windows on each stage, while the side divisions have each one window. The grouping of two openings together is never so pleasant as of three, since you get the pier between them in the centre instead of the opening. The number three is an essential to complete beauty in architecture. If we examine an ancient Greek or Roman temple we shall find the principle of three prevailing throughout. Taking first the whole order, we find it to consist of three parts, the entablature, column, and steps. In the entablature we find the cornice, frieze, and architrave; in the column, capital, shaft, and base. Dissecting the cornice we find it consisting of corona, a block or modillion member, and bed mold. In the capital of the column is the abacus, foliage, and neck mold; in the base small and large torus molds and cavetto. You may examine more closely still, and find the same principle prevailing. Take the corona of the cornice, for instance, having still three members, crown mold, small cyma reversa, and the broad surface of the corona proper. This great principle has been derived from Nature, in whose domain it is exhibited in multitudinous forms. In the pyramid, triangle, and ogee the same number prevails. Three was a sacred number with the Greeks, as we have lately been amusingly reminded in an anecdote of Gibson, the sculptor.

Returning to our villa, I would draw attention to the treatment of the centre windows. The details of these are refined and pleasing. Over the centre windows on the ground floor is a projecting balcony, with a light iron balustrade. These balustrades are much used on the Continent, and have this advantage over stone, that they scarcely at all obscure the building behind them from view, and do not dwarf the fronts as more solid ones would do. The whole of the façade shows careful study; the delicate curves of the window heads do not clash with the horizontal lines of the entablature, and being brought close up to them break up their rigidity completely. The elevation to the side street is of the same character as the other. The portion containing the staircase is marked out distinctly from the rest by being built of brick, like the stable building, the small courses of brickwork being much more suited to the smaller features than stone.

---

[*] By W. H. PICTON, A.R.I.B.A. Read before the Liverpool Architectural Society.

Let us pass on now to the third and concluding division of our subject, the *troisieme classe.* I take as an example a house situated in the Rue de la Pompe at Passey. The ground plan contains, large and small drawing-rooms and salle à manger, with the stairs in one corner of the house, so as to interfere as little as may be with the available space. The kitchen and office in the basement has an entrance from the front beneath the flight of steps leading to the front door. On the first floor are three bedrooms and water-closet, to which light and ventilation are obtained from a small area carried up from the level of the first floor. The same arrangements are repeated above on the second floor, the only difference being that the space at the back is made into three bedrooms in place of two. The exterior is neat, but does not exhibit any special marks of taste. A better specimen in this respect is a house of this class by M. Hermant, at Neuilly, which, though somewhat bizarre in character, is pleasing.

In drawing to a conclusion the remarks which have occurred to my mind in examining the buildings brought before you this evening, I fear with much feebleness, I will briefly recapitulate the hints which I think may be derived from them.

1. I would impress upon our student members the great importance of careful planning. The minutest matters become great in the arrangements of a dwelling.

2. In the laying out of land, kitchen gardens and planting grounds should be worked in harmoniously with the general design.

3. There should in every dining-room be a window at the head of the table.

4. Play-rooms and school-rooms for children are better separate from the house in detached buildings, where this can be managed.

5. Hints derived from the Gothic and Classic styles can be successfully combined by careful study.

6. Our great object should be, not so much to act on the principles of any one style as on the general principles of beauty.

7. Our art must satisfy the imagination as well as the reason.

8. A conservatory may be made valuable as a communication between apartments.

9. There is a rule of three in our art as well as in arithmetic, and equally important, as we shall find on examination.

10. The stone balcony and iron balustrade are worthy of imitation and use, to relieve the flatness of our house fronts.

11. Window heads and string-courses may be made mutually to assist each other by an avoidance of harsh contrast and close contact.

Before I close I wish to say a word for the beautiful work from which my illustrations are taken. For the exquisite manner in which the plans and details are got up I have never seen anything to surpass it. The sheets of parallel plans of villas with which it is interspersed are well worthy of study. The dimensions are given on each plan, with separate scales for the elevations and plans. The work consists of several volumes, and may be seen at the Free Public Library.

SOME ACCOUNT OF THE OLD PARISH CHURCH OF SAINT MARY MAJOR'S, EXETER.

THIS church, in order to distinguish it from others of the same dedication, had various adjunct appellations, being called in ancient writings S. Mary Michael, S. Mary the Moor, and S. Mary Major. It was an ancient edifice, but from the style of the building, recently pulled down to make room for a new one of Early English design, it did not appear to be the original religious structure erected on this spot, it being of Norman construction; whereas mention is made of it during the Saxon epoch, it being appropriated for holding the Archdeaconry Court of Exeter, on the removal of the see from Crediton, and the said court is still held in the new edifice. In the year 1222 it is recorded as one of the parish churches then in this city: it was built in the Saxon manner, consisting of a nave only, without any supporting columns, with pointed arched windows. At the east end, through a lofty Gothic arch, it opened into a large chancel, which was of a different construction, and appeared of a more ancient date than the body of the church; it had a separate entrance from the yard, and over the north window was a small tablet representing S. Lawrence in a state of martyrdom on a gridiron; and on the angles of this and the other windows, cherubims supporting gridirons were represented in *basso-relievo.* Opposite the entrance into the chancel was a small vaulted room, sometimes used as a vestry.

The tower, which was situated at the west end of the church, was of singular construction, and had more the appearance of the keep of an ancient castle than of a campanile or bell-tower. It was evidently a Saxon building, and of more ancient date than the church. In its original state it was of greater height than lately; for about the year 1768, a survey being taken of it, the uppermost part was found decayed, and in danger of falling, greatly overhanging the base; therefore 35ft. of it was taken down, and an ill-constructed cupola erected in its place. On the south and west angles were two strong projecting circular staircases, which led to its summit; and the other two angles where strengthened by large buttresses. The original entrance into this building was through a semicircular arched gateway between the projecting staircases, and over it was a large semicircular arch, in the middle of which was a small window; and in the buttress on the north angle was an antique niche or recess, surrounded by a plain band or moulding. For what purpose this recess was intended cannot be conjectured: its situation in the buttress proves it was not designed for a window, neither was there any sign of a statue having ever been placed there. This niche was the only embellishment to be seen in this antique fabric. Nor does history or tradition inform us of the original intent of our ancestors in erecting this massive building, and, therefore, conjecture only can be offered; some are of opinion that it was a pharos, or watch-tower; others that it was a fortification, and the *dernier ressort* of the inhabitants in time of war,* for which its strength in those days seems calculated; but these are opinions only. From the construction of the pointed arch, by which a communication was opened from the tower to the church, it seems the work of some ages after its first building. It had in former ages a lofty spire, but that has been removed for upwards of two centuries; also six bells, five of which were sold (to the great regret of the parishioners) towards defraying the expenses incurred by taking down part of the tower in the year 1768. On a wooden tablet, hung in the angle of one of the windows on the north side of the church (now removed), were painted the arms of Petre: gules on a bend or, a Cornish chough proper, between two cinquefoils azure, between two escalops argent; and underneath the following lines in black letters:—

Twenty churches can reporte
The goodness of the manne
Who bare those arms in his life,
Through virtue he them wanne:
Of customers I think it meet
He ought to have best prayse
John Petre,† so he knowe his name,
He died by Exe, at Hayes,
Who by his will and testamente,
The Lord be praysed therefore,
Gave twenty pounds, in yearly rente,
To the poore for evermore:
So that the poore should have some part
Which he was blessed withalle,
God give us grace to do the lyke
When hee us hence shall calle.

BUILDING NEWS SKETCH BOOK.

XL.—OLD HOUSE AT THORPE, PETERBOROUGH.

THE subject for our sketch book this week is an old house in the parish of Thorpe, about one mile and a half from Peterborough, now in the occupation of Mr. James Warwick as a farmhouse. As will be seen, the tower is much the oldest portion. It is square on plan, with walls about 7ft. or 8ft. thick, and the two lower stages are both groined over, the stone ribs of which and the moulded angle corbels being apparently as clear and fresh as on the day they were first put up. The upper stage is reached by a narrow and very steep stone stair, and here there are several very curious nooks and corners; it is covered with an open pyramidal roof covered with stone tiles. From enquiries made in the short time I had at my disposal I was not able to learn the name or original use of the building, but it is said to be part only of a much larger building which originally had four of these towers.

There are several other very interesting old houses in the village of a later date, and between it and Peterborough is passed a grand old Italian mansion, said to be by Inigo Jones (at Thorpe Park). The church also is interesting. Though small, it is simple and good; the windows are two-light cusped lancets, not unlike the single-light window in sketch, and possibly originally formed part of this building. These buildings would well repay a visit from any students in architecture who might have a day or two at their disposal, as they are very accessible from town, there being so many express trains to and from Peterborough.

John Ladds.

OLD OAK CABINET.

THE ancient oak cabinet of which we give an illustration is a very good example of old English furniture. The date is probably late Elizabeth or early James I. The lower panels are particularly worthy of note, and the mouldings are throughout very delicate. Some of the ornament, on the other hand, may be considered somewhat rude, but if wanting in the machine-like accuracy of modern work, it has a vigour and freedom which we look for in vain in the tame and spiritless productions of the present day. The ornament on the frieze, for instance, is not even spaced out equally, but if it were the general effect would probably not be improved. The inlaid work round the upper doors is composed of pieces of black and yellow wood, apparently bog-oak and box. The carved side of the cabinet is the one shown on the drawing, the other side being plain panelling; from which it appears to have been designed for some particular situation.

With so many excellent specimens of furniture of the 16th and 17th centuries still remaining, it is unfortunate that modern designers of furniture should draw so largely on their own poor powers of invention, for the comparison between ancient and modern work is anything but favourable to the latter.

The only portion of the cabinet which is not old work is the moulded cornice, which has been lately added, the original one being gone.

J. H. M.

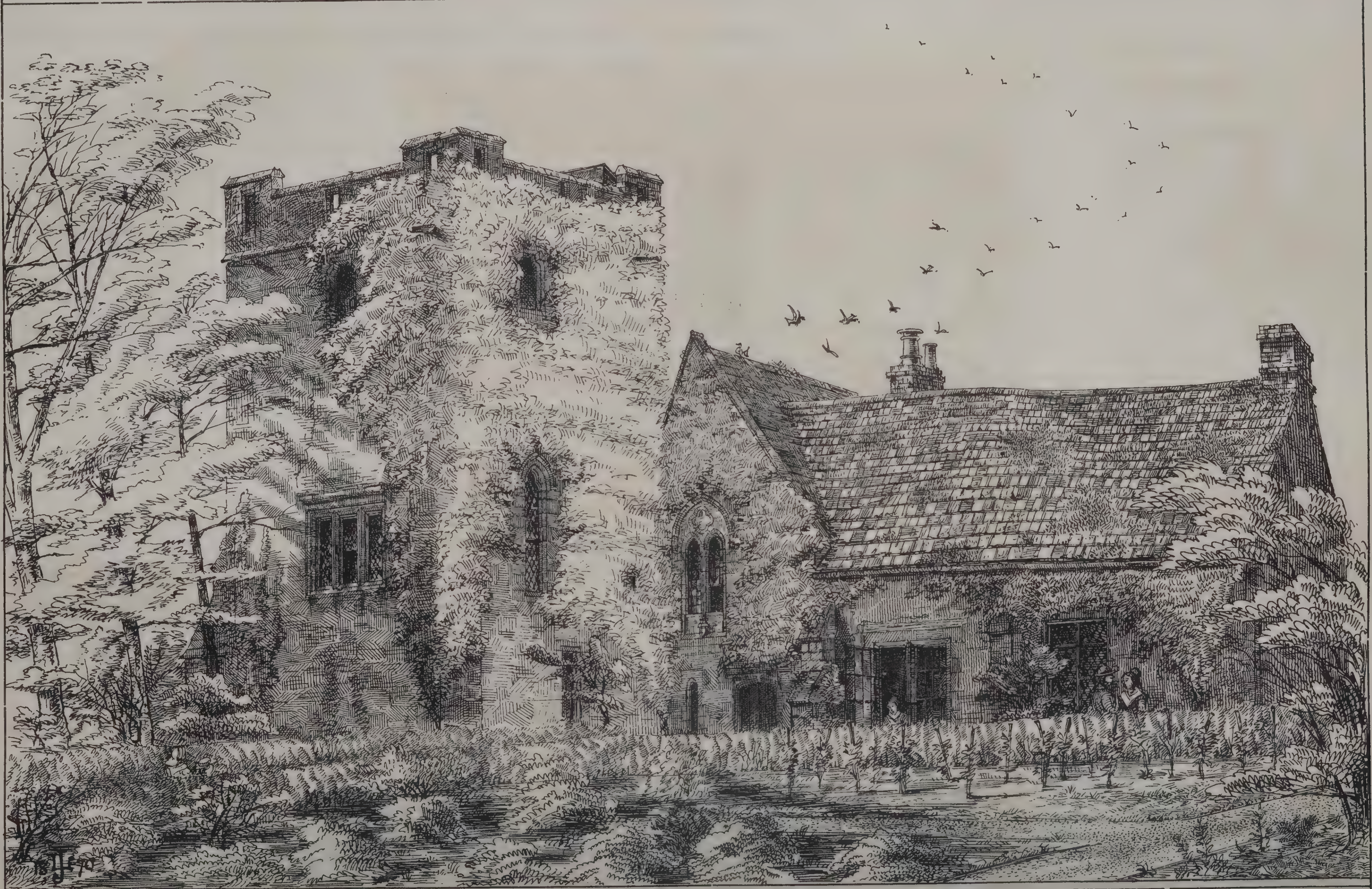
LONDON WATER.

PROFESSOR FRANKLAND, in his report to the Registrar-General on the quality of the metropolitan water supply during the month of July, states that all the waters delivered in London were clear and transparent, except that of the East London Company, which contained brown particles and filaments among which living organisms were observed. Dr. Frankland makes two suggestions of great importance in a sanitary point of view. He points out that the patent for Clark's softening process having expired, all water companies are free to avail themselves of this simple method of reducing the hardness of water and removing from it a large proportion of organic impurities. It would not be an undue return for their monopoly of the supply (as a medical contemporary observes) if the London water companies were in future to apply Clark's process to all the water delivered by them for the public use. Dr. Frankland insists also on the good quality for bathing purposes of the Thames, as it passes through London, after its water has been filtered through sand. "The river current," in his opinion, "would afford power for effecting this filtration, and public floating baths established on the Thames, through which a constant current of filtered water was made to pass, would be much superior, both as regards convenience and purity of water, to the best bathing attainable in the Serpentine." The establishment of swimming schools for both sexes on the Thames would put an end to the unfavourable comparisons between London and some other cities of Europe as regards this valuable adjunct to public hygiene.

---

* See Judges, chap. ix., v. 51.—"But there was a strong tower within the city, and thither fled all the men and women, and all they of the city, and shut it to them, and gat them up to the top of the tower."

† This John Petre was sometime the King's Customer for this port; he, by his will, dated 1579, left £20 per annum, issuing out of the sheaf of Cornworthy, in the county of Devon, to twenty different parishes (of which this was one) for the preferment of poor maids in marriage.

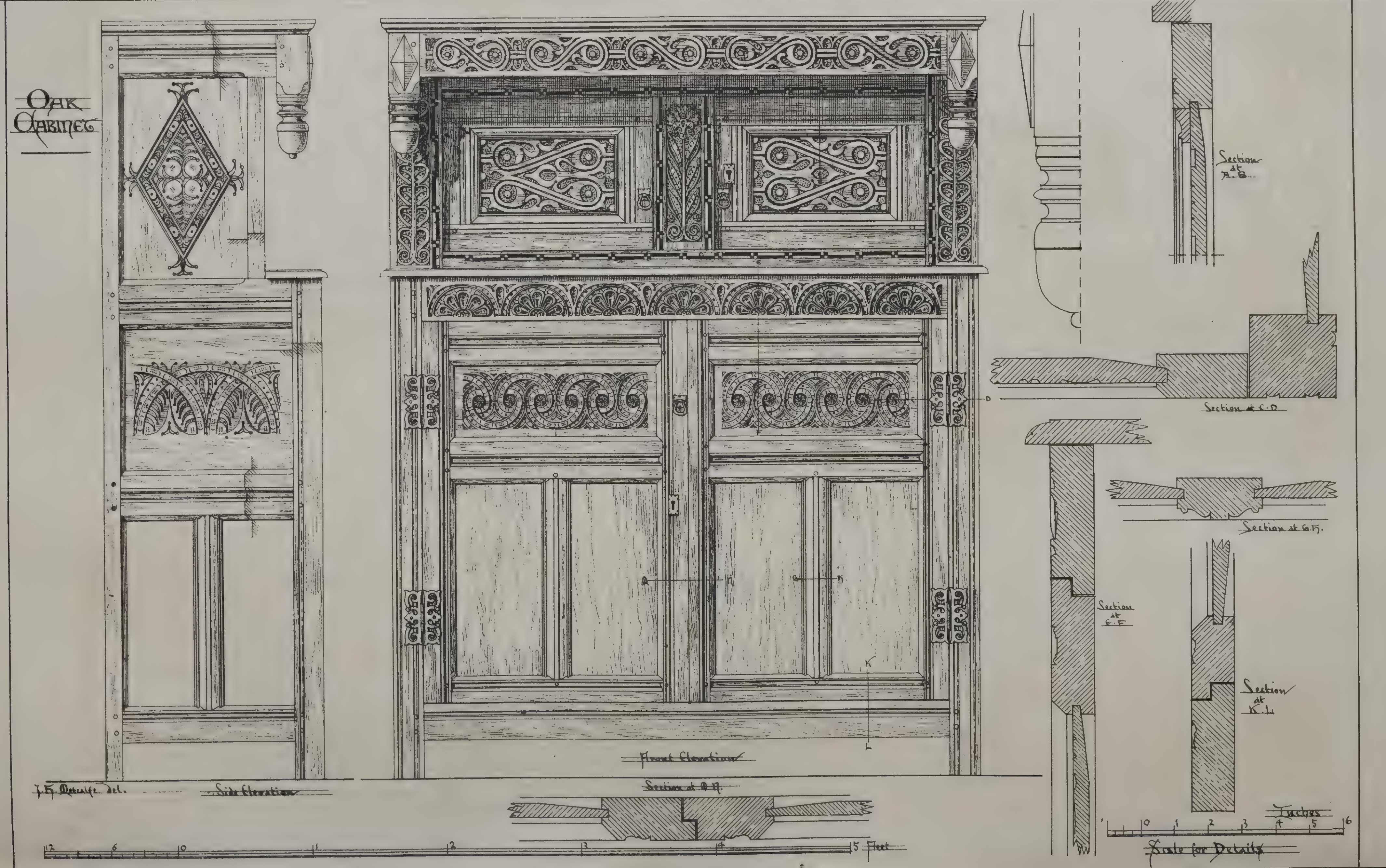


Old House at Thorpe nr. Peterborough.

John Ladds del

Photo-Lithographed by Whiteman & Bass, London

The Building News, Aug. 19th. 1870.



Furniture & Decoration.

THE THEORY AND PRACTICE OF MODERN HOUSE PAINTING AND DECORATION.

By AN EXPERIENCED WORKMAN.

PREPARATORY PROCESSES.

(Continued from page 120.)

IN order to produce good work in the painting of walls and plaster work generally, it is necessary to use a wise discrimination, and to observe certain rules both in the mixing of the paints for use and in using them after they are mixed. As we have before observed, there is a great difference in the absorbent powers of certain cements and ordinary plastered walls, and there is just as much difference between the absorbent powers of the ornamental castings in plaster of Paris and ordinary plaster work, or, indeed, of any work which is finished with the trowel. Plaster casts are of a very thirsty nature, and will absorb a very large quantity of either oil or water, and if there is too much white lead in the paint with which these castings are first painted they are apt to clog or fill up; consequently, they should be painted the first time with colour having more oil in it than that used for the walls. This is the more necessary as its neglect often spoils the sharpness of the finer parts of the ornamental work. There is also another advantage in using the first coat of paint thin—*i.e.*, it sinks further into the body of the plaster, and in time forms an exceedingly hard and firm surface, which serves as a protection to the work. Many painters make a practice of giving the walls a coat of clearcole, or glue-size, before painting, in order to fill up the pores or to prevent the suction of the plaster; and also between the two last coats, in order to cause the work to bear out or present one uniform surface, so that the omission of one or two coats of paint may not be observed when the job is finished. We cannot find words strong enough to condemn this practice; in the first place on the score of its dishonesty—for we know it to be a common practice for painters to contract to give work three, four, or five coats of paint, and, instead of fulfilling their contract honestly, they give the work one or two coats of size instead of the same number of coats of paint, and thus commit a decided robbery. With these men an honest man has no chance in contracting for work; furthermore, the demoralising effects of such practices upon the workman cannot be calculated. An old proverb says that practice is better than precept; in this case it is not so, for there is no precept which inculcates dishonesty, and this practice does teach dishonesty. Putting this aside, we object to the practice altogether, because of its liability to cause the paint to crack and peel off. Under certain conditions we have seen the paint shell off in large blisters and in sheets, solely because size has been used; and it may be laid down as a rule that glue-size used upon paint is in all cases employed either to save labour or material, and that there is no case where it can be used with advantage to the work. It may sometimes be *expedient* to use it, but it is better in all cases to do without it. In laying on the paint, care must be taken that it is laid on evenly and without showing the marks of the brush. This is quite as necessary with the first coat as with the last, for if carelessly or badly painted in the first coat, much after labour will be required to rectify it, and in many cases it will remain an irremediable defect. If care is taken to avoid this fault, a deal of trouble will be saved, and the work will be better at the finish. Unfortunately, carelessness in this respect is the rule, and carefulness the exception, the painter often trusting too much to the subsequent coats of paint to cure an evil which, by common care, might] be avoided at the beginning. The paint should be laid on and well crossed, and when it is laid quite equally, with no more in one place than in another, it should be laid off softly, and not with the full weight of the brush. By this means the work will present an even surface, free from the marks of the brush; but if much pressure is used the work will be streaky, and the paint will stand in ridges. This is a very common but a very serious defect, and always spoils the work on which it appears, and, therefore, pains should be taken to avoid it as much as possible. A good plan to attain this desirable object is to use a partially-worn flat or stock brush, or a two-knot copper-bound brush, for laying-off with. We thus lay-off a wider space at one stroke, and are less liable to leave an uneven surface. The second coat on walls should be mixed with about two-thirds oil to one-third turpentine, in the proportion of 5lb. of lead to one pint of thinners, this coat requiring a greater body of lead in it than the first coat. The same care should be bestowed in laying it on the walls as before; but previously to commencing to lay on the second coat the walls should be rubbed down with fine sandpaper in order to remove any nitts or grit, and all places which may have been overlooked in the first stopping should now be faced up with hard stopping, great care being taken that the places stopped do not stand up above the face of the surrounding level. The third coat should be a mixture of two-thirds turps to one of oil, keeping about the same proportions of lead to thinners (*i.e.*, oil and turpentine) as named above. It must be observed here that the more turpentine there is in the colour the quicker it will have to be worked, as the turpentine evaporates so quickly that the paint sets or gets stiff very soon, consequently it is best to paint a strip of the wall at once about 16in. or 18in. wide, from top to bottom of the wall. By this means the whole is kept sweet or wet together. The last strip may be laid off into the edge of the one preceding. We thus get a perfectly level and uniform surface, but if too much space is painted in at one stretch the edge of the preceding one is apt to set before it can all be laid off, and so the work will show a mark or "piecing" between each strip. The fourth coat will require to be painted with gloss or oil colour. We may here explain that gloss colour upon gloss colour does not work well, the last coat being apt to "cess" or contract, so that in order to make firm solid work it is necessary to manipulate the successive coats of paint part dead and part gloss colour; and in the painting of the last coat before flatting it is absolutely necessary that it should be gloss colour, in order to form a key to bind the flatting, because the flatting, being mixed with turpentine alone, has no binding qualities in itself, except the small portion of oil which the lead itself contains, and even this must be removed as much as possible to make good flatting. The wall should be painted with oil colour one day, and flatted the next day following. If this is not done the oil colour gets hard and loses its key or "tack," and the consequence is that the flatting is not bound fast, and will wipe off with the slightest touch, and will not wear any length of time. It is a common complaint with housekeepers that the dead colours do not wear well. The sole cause will be found to be as above stated, and of course can always be avoided. If the work is properly done the flatting softens the face of the oil colour, and the two form one homogeneous whole, and will get almost as firm in time as oil colour. The fifth coat (under which number of coats no new walls can be properly finished), if it is to be flat colour, will require to contain a greater proportion of lead than the previous coats, as turpentine will hold in solution a much greater quantity of lead than oil does, and yet work thinner. There are several points to be carefully observed in order to produce good flatted work. What we have before said as to getting the work quickly done is especially applicable to flatting. If it is a good job it will appear of one uniform surface, free from shades or half-glossy parts, and this can only be attained by great care in the working. The flatting colour is best mixed ten or twelve hours before it is used. The oil contained in the lead rises to the surface, and may be poured off, which will assist the colour to dry much freer from gloss than if the oil were not removed. The paint may now be thinned to a working consistency with pure turps.

(To be continued.)

THE ARCHITECTURAL AND ARCHÆOLOGICAL SOCIETY OF DURHAM AND NORTHUMBERLAND.

THE third general meeting of this society was held on Tuesday, August 2nd, at Aycliffe, Heighington, and Walworth Castle. Members assembled at Aycliffe Church about half-past ten a.m., when the Rev. J. F. Hodgson read a paper on the history of the place, originally known as Acle or Aclea, and its supposed connection with the Saxon synods held in the years 782 and 789, but the exact locality of which a very preponderating weight of evidence serves to fix in the kingdom of Mercia. He then passed on to a critical examination of the architecture of the church, and the several peculiarities presented by it. Though plain and simple, the building, notwithstanding much modern mutilation, is a very interesting one, showing distinct evidence of progressive alteration and development from the time of its erection in the latter part of the twelfth century to the close probably of the fifteenth. On the conclusion of the paper, the two very ancient and richly-sculptured Saxon crosses standing in the churchyard were carefully investigated, when the president, the Rev. W. Greenwell, delivered an elaborate discourse on them and other kindred works of that remote period, taking in connection with them a comprehensive view of the whole subject of Celtic decoration, as witnessed by the several remains which have come down to us from some thousands of years before Christ, through the period of the Roman empire, and that which followed its decline. Leaving Aycliffe the party proceeded to the neighbouring village of Heighington, the church of which, probably the most perfectly-preserved example of the Norman period in the whole diocese, was carefully examined and described by Mr. Hodgson. With the exception of the south aisle, an addition of late thirteenth or early fourteenth century date, the whole structure is of one period, *circa* A.D. 1155-60, and built at a single effort. Perhaps the most remarkable feature is the chancel, which is in two nearly equal transverse divisions. The eastern one—considerably the narrower—forms a structural sanctuary very strongly defined—the western, the chancel proper, or *chorus cantorum*. The chancel and tower arches are well moulded and perfectly preserved; the latter, however, is at present entirely concealed by a modern partition wall, which shuts off the tower from the body of of the church. The old Norman doorway, of imposing aspect, but somewhat singular decoration, is now blocked up. A modern one has been broken out in the tower, thus practically converted into a porch; the loss of room which the church has thereby sustained being made up for by the erection of galleries. In the tower are three ancient bells of remarkable excellence, and perfectly preserved. They all bear incriptions; two of them in characters of the thirteenth century, the other in black letter. In respect of shape, beauty of decoration, and excellence of tone, these bells are quite unrivalled in the North. Walworth Castle was reached between two and three o'clock, where the members were met and most courteously entertained by the family of Mr. Masterman. Mr. Longstaffe then gave a full account of the ancient owners, and of the once adjoining, but now destroyed, village. This was followed, at the president's request, by an architectural account of the castle, from Mr. Hodgson. The Decorated village church or chapel, now used as a barn and cow byer, was then visited. It is very small and simple, but on the whole tolerably well preserved. The few remaining details show it to have been erected during the last quarter of the twelfth century, *circa* A.D. 1180. The wooden door, with its ancient closing ring of wrought iron, remains in the neighbouring farmhouse. Having now accomplished all the objects of the day, and bade farewell to their kind entertainers, the members dispersed on their several ways about five o'clock—the president, with some others, to make an inspection by the way of certain ancient relics discovered during the late restoration of S. Cuthbert's Church, Darlington, with a view to their transference to the museum of similar antiquities now being formed in the library of the Dean and Chapter at Durham. The next meeting of the society will be held about the end of the present month, or early in September, at Rievaulx and Byland Abbeys, including the churches of Thirsk, Helmsley, Coxwold, &c.

◆

NEWCASTLE-ON-TYNE.

TOWARDS the end of the last century, Newcastle extended little beyond the ancient and strong walls with which it was surrounded, and in 1801 it contained, we believe, only 28,000 inhabitants. The banks of the Tyne, now resounding with the industry of thousands of workmen, were then a pleasant stroll for the worthy burgesses. Dr. Charlton, in his inaugural address last week as president of the British Medical Association, briefly sketched the rise of the town, and after referring to the place as having formerly been one of the great strongholds of the North, he remarked that for centuries after border warfare had ceased it remained subject to all the inconveniences of a fortress. Hence arose the narrow streets and overhanging dwelling-houses of the Tudor and Elizabethan periods, some of which may yet be seen in the neighbourhood of the river and within the precincts of the ancient walls. Still, in the centre of all this crowding, there was a fine open space of five acres, the very lungs of the old town, and which remained untouched till about thirty-five years ago, when it was purchased by an enterprizing speculator, who covered with huge buildings the whole of the vacant space, which is now occupied by Grey-street, Grainger-street, and the markets. About the same time trade increased rapidly upon the Tyne, manufactories sprang up on each side of the stream, new branches of industry were developed, and the old parts of the town became fearfully overcrowded. Unfortunately, while house accommodation was thus deficient, the water supply did not keep pace with the increase of population. It may now be said, with almost perfect truth, that Newcastle and Shields form but one continued town, for within the last twenty years almost every rood of the banks of the Tyne, from Newcastle Bridge to the sea, has been occupied by manufactories. From its position on the shore of a tidal stream, and from the steep incline on each side affording good facilities for drainage, from its now fair supply of water (from reservoirs twelve miles from the town and free from all danger of contamination), and from its proximity to the sea, Newcastle ought to be a healthy town, and to present a low rate of mortality. The death rate of late years has, however, been comparatively high, owing to visitations of epidemics, which have rapidly spread, owing to the over-crowded state of the smaller tenements of the town.

◆

SUFFOLK INSTITUTE OF ARCHÆOLOGY

THE annual excursion of this society took place on Thursday week, the *rendezvous* being Halesworth.

The first place visited was Halesworth Church, where the party was met by the vicar, the Rev. V. J. Stanton, and Mr. R. W. Burleigh, who pointed out the various objects of interest. The church is built in the Perpendicular style. Within the last few years an aisle has been added on each side, which gives great breadth and spaciousness to the building. The principal points of interest were some brasses dredged up from the river Waveney, near the "Roaring Arch," in 1825, which were found to have been taken from this church, and which fell into the hands of the Rev. S. B. Turner, and were by him restored. In the restoration of the church afterwards the stones from which they were taken and the matrices plainly belonging to these brasses were found, and the whole are now placed on the east wall of the south aisle. Mr. Burleigh showed a sacramental book kept by the Rev. John Argall, who was vicar of Halesworth from 1580 to 1610, and there were several curious items among the entries. The font is beautifully carved, and remarkable for its enriched work. At the east end of the church is some very fine flint work; as also at the entrance to the aisles, where there are some good canopied niches in the buttresses. A few years ago the church was thoroughly repaired and restored, and it is now one of the finest churches in the county.

Holton Church was the next place visited, the party being met by the incumbent, the Rev. R. S. Beloe. The church, prettily situated on the border of Mr. A. Johnston's park, has a round tower, and is principally new, but the style of the older portions is Late Norman. The roof is now tiled, but there are marks on the tower which show that it was originally thatched.

Westhall Church had many points of interest to the archæologists. It appears originally to have been a chapel to West Hall, but when West Hall became a parish it was enlarged, and a tower built in front of the fine Norman doorway, which it is conjectured was the original entrance to the church, and above which is an arcade which is supposed to have been windows. There is an altar tomb, erected by Francis Bohun to the memory of his son, who married Audrey Coke, sister to Lord Chief Justice Sir Edward Coke. The octagonal font is worthy of notice, as showing remains of painted sculpture, representing on seven panels the seven sacraments of the Romish Church. On the remaining panel is what is supposed to be the baptism of our Lord.

A long and pleasant drive through country roads brought the party to Reydon Church, a plain building apparently belonging to the Perpendicular style.

The excursionists then proceeded to Southwold, where they visited what is said to be one of the finest if not the finest church in the county, and which certainly has many objects of interest to the archæologist. It is dedicated to the martyr-king, S. Edmund, and is a splendid specimen of the Perpendicular style, the tower being especially fine, though the parapet has never been finished. The roof of the chancel is painted to represent the stars in the firmament. Among many other objects of interest in the church must be mentioned the figure of a man in armour, which stands above the vestry door, and with his battle-axe strikes a bell before him as the clergyman comes into church to service. Mr. R. M. Phipson kindly undertook to point out the main points of interest, and the Rev. W. Sewell gave a description of the rood-screen.

The party then went to the Lecture Hall, where a capital little museum had been arranged by Dr. Blackett. Among various articles may be mentioned a parchment roll, of extraordinary length, containing the list of bailiffs and mayors of Norwich from 1403 to 1737, exhibited by Mrs. Rayley; also "One-third Part of the Bible, containing some excellent books," with the Church of England Liturgy, printed in 1638, with a book of hymns printed at about the same date, all of which were the property of Mrs. Rayley. There was also an ancient violin, made of iron, which was found near Battle Abbey, Sussex, and was exhibited by the Rev. R. F. Whistler, together with a collection of ancient coins, the head of a battle-axe, and a very old padlock and key used at Battle Abbey. There were cannon balls dredged up from the bay, having been deposited there at the renowned "Sole Bay fight" between the English and French and Dutch fleets. A sketch was shown of the stones found at Mutford Wood, near Lowestoft, and an old knife; some bones and other things found near them were also shown. Two charters granted to Southwold, a large number of polished pebbles picked up from Southwold beach, and a variety of other things, were included in the collection, and great thanks are due to Dr. Blackett for his trouble in getting it up.

Blythburgh Church, the next visited, was once a very fine edifice, but is now almost a ruin. It is in the Perpendicular style, and its size seems to point to the fact that Blythburgh was once an important town. The party were here met by the Rev. J. J. Raven, who had prepared a paper upon the church and priory. The priory was first visited, and Mr. Raven, having mounted a portion of the ruins, read a long and interesting paper. Mr. Truman, a resident in Blythburgh for the last fifty years, pointed out the place where the arch fell in 1863, and a part of a stone coffin which had been found, together with other matters of interest. The company then walked to the church, where Mr. Raven continued his paper. Entering the church, Mr. Raven drew attention to the roof, which is depressed, and there is no division between chancel and nave.

The next stoppage was at the little church at Thorington, which is one of those with a circular tower, round which is an arcade of shallow panel work. Bramfield Church was the last visited, and has a peculiarity in the fact that it has a round tower, which stands detached from the church. The reason for this has been discussed, and the most probable seems to be that the church was originally built without a tower, and that afterwards, wishing to have one, but not wishing to block up the west window, the tower was built away from it.

The company then returned to Halesworth, which town was reached shortly before seven o'clock.

◆

SAVE OUR FOREST TREES.

WE welcome a protest against the destruction of the New Forest, on the ground that "trees are the great retainers of moisture," and that the droughts of late years are to some extent the result of the great decrease of trees on the surface of our country. The French Government, having similarly suffered, are planting afresh in all directions in order to supply the loss of trees which have occurred since the Revolution, the land having been largely cleared and the forests cut down. Is it wise on our part (asks the *Globe*) to cut down the New Forest, a reservoir of moisture whose value is heightened by the fact that no hills of any magnitude are found in the district? You cannot replace those mighty trees; if once the area of the forest is cut into agricultural parallelograms its ancient character can never be reproduced. It is a short-sighted policy which would cut down a five-hundred-years'-old oak, which has brought down myriads of rain clouds, in order to find room for half a rood of potatoes. Everywhere trees are disappearing from the hedgerows, while the reckless unscientific drainage of modern times is lessening the supply of springs and making drought inevitable whenever the summer is rainless. In fact, our agriculturists are doing their utmost to reduce England to the condition of Egypt, forgetting that neither Thames nor Severn is a Nile, fed by mysterious highland lakes and inundating the country every year. The New Forest, like Epping Forest, is Crown property, therefore the officers of the Crown should be the last to render it useless, or comparatively so, to the nation. We are told that "by the enclosure of commons 540,358 acres have been taken in since 1848. Of these only 3,746 have been allotted to recreation grounds and gardens for the labouring poor." If this be true, how great a fraud has been committed on the people!

◆

THE VENTILATING OF CELLARS.

MUCH has been said, says the *Technologist*, about the necessity of rendering the basement and cellars of houses sweet and wholesome; but although this subject, which so intimately concerns our sanitary economy, has been before the public for years that need not now be counted, little progress has been made in attaining the wished-for end.

The cellar of a house may fairly be likened to the lower hold of a floating ship—the one being below ground, the other sunk in the water, and a like difficulty attends the ventilation of both—namely, the expulsion or extraction of foul air, to be replaced by that which is pure, or as nearly pure as circumstances will admit. The first thought is that of the extraction of the foul air, and it is one which has a claim upon science that has scarcely received that attention it deserves, although common sense ought to teach us that health depends upon it. Cellars are not always ceiled, and, even when they are, it is in such a coarse manner that the defence thus made against rising exhalations and the effect of a damp atmosphere upon the floor above must be very slight indeed, so porous is this rough coating of plaster. Some persons fancy that to flag or cement the cellar floor and walls is a preventive of noxious gases forming there. But this is a fallacy. It is true that such a treatment makes the cellar dry (provided the under drainage be perfect), and, to that extent, improves the atmosphere, yet still it has that death-chill to be found in the subterranean tomb where decomposition reigns, and where, notwithstanding the stone surface surroundings and cemented brick arches, damp settles and foul air is the only atmosphere. The lower hold of a ship is subject to a similar state of noxious air settlement, but both of those have a less influence for mischief upon human existence than has the cellar under the dwelling house, for the tenants of the latter are experiencing the injurious effects for a lifetime, whilst the passengers and crew of a ship have a limit of a voyage to their experience, and the tenants of the tomb are past its influence. Now, if ship fever and many other malignant outbreaks of disease may be traced to this source, even during the comparatively short duration of a sea-voyage, how much more to be dreaded and guarded against is the permanent evil arising from the presence of such a Pandora's box beneath our very feet and sending up its subtle influences to undermine our existence?

As we have already intimated, the difficulty in remedying this necessary evil of cellars lies in the perfect expulsion or extraction of the stagnant fœtid atmosphere, and this can be effected by either revolving fans exhausting a flue or flues (either vertical or oblique), or by forcing-pumps propelling fresh external air into, and thereby driving the foul air out of the cellar. There are other means, however, which we will suggest as eminently fitted for this purpose, always keeping in view the one great principle which governs, or seems to govern, society—economy. The chimney being the indispensable feature of every house, the use of it as a means of ventilation is ever present. And, as heat is a conductor which can thus be easily made available, we have at once a solution of the problem of extraction in the simple addition of a continuous flue from cellar to chimney top, which may also have one of the simplest of the patent revolving ventilators now in use attached to it. As an aid to this vertical ventilating flue, we would have another flue for the reception of external fresh air at the ground level, which would supply the place of the retreating foul air, and thus maintain a wholesome current, or, at least, a constant change of atmosphere. In order to build the chimneys to suit this principle of ventilation, it is only necessary to construct two flues 4in. square, one at either side of the fireplaces, and occupying a position in the chimney breast nearest the fireplace. The object in having two of these 4in. flues is to balance each other, and, at the same time, to give in the second one a very desirable servant in any household—namely, an ash-shoot, through an iron trap in which, located on a level with the hearth, the embers, dust, and ashes may be cleanly swept and be instantly precipitated to a receiver or close dust-bin in the cellar. It would be very desirable to have both of these flues made circular, which could easily be effected by the mason using an open tin cylinder, with a handle at the upper end by which he could draw it up as he proceeded with his work. Around this cylinder he should plaster close with lime and cement, in equal proportions, against three times as much sand. Of course, the flues may be square, or even oblong, but, of whatever shape they may be, it is absolutely necessary that they be carefully pargetted or lined with plaster. This, in the one flue, prevents the lodgment of ashes on projections, the accumulation of which might eventually choke up the passage and destroy the efficiency of this useful labour-saver, and, in the other, gives a freer passage to the ventilating draft.

A more expensive, but far more perfect, method of ventilating cellars would be to ceil over the whole space, and place ventilating thimbles at intervals between the joists. In this way the spaces between joists may be made to act as air tunnels, having grated openings in the external walls. In fact, there is no good reason for not so utilizing these joist spaces. In order to thoroughly purify the atmosphere of these underground rooms called cellars, where a stream of water from a spring is available, a cemented drain, open on top, is excellent for the purpose, the current carrying off all mephitic gases and creating ozone, the purest of atmospheres. Where a running stream from a pure spring cannot be had, its place may be partially supplied by the use of the hydrant at one end and a small pump at the other, thus letting the water in from the street in a continuous stream, running through the cement channel already spoken of, and drawing it off at the other end, unless the sewer be below the bottom of the cellar, in which case the pump is not needed. This artificial flow of water should take place twice each day—in the evening to cool the atmosphere after the sodden effects of the day, and in the morning to clear off the exhalations of the past night. Have as many windows as possible and at as many sides as practicable, and let them be removable. There should always be an outer door, reaching to the very bottom of the cellar, and it, and the trap outside, should be opened as often as possible for the admission of air.

We cannot dwell too much or too long on this subject of ventilating cellars, for the neglect of such a practice endangers the health of a household. Every moderate dwelling has an inside cellar stairs with one door only, and that opens directly either into the living room or the kitchen, so that if decaying vegetable or noxious refuse be there and ventilation be wanting, this door becomes a valve, through which, when open, the poisonous atmosphere escapes into the upper part of the house to generate disease, and who can say how many lives have been shortened through this one means alone?

The cellars of our houses are too much neglected because they are out of sight, and yet much of the food we eat is stowed away there. Is it consistent with cleanliness, nay, with common sense, that such a state of things should be permitted to exist in any community where health is prized and long life looked for?

SCHOOLS OF ART.

Bridport.—The Bridport School of Art was opened on Monday week, after the summer vacation, when a public meeting for the distribution of prizes was held in the lecture-room of the Literary and Scientific Institute. The Rev. R. L. Carpenter, the secretary, reviewed the position of the schools with regard to the Government prizes, comparing the results with those of other schools, by which it appears that Bridport this year has been very successful. We may here state that the pupils of the schools have just presented Mr. D. Campbell, the master, with a handsome gold watch, in recognition of the zealous and painstaking manner in which he has discharged his duties.

Dover.—The opening meeting of the Dover School of Art took place on Monday evening. The rooms selected for the business of the school are two belonging to the Old Ship Hotel, which have now been completely transformed into a school of art. Models of every sort are arranged around the walls, and some very good statues for anatomical drawings have been obtained. The Mayor occupied the chair, and was supported by Richard Redgrave, Esq., R.A., and Major Dickson, M.P.

ARCHÆOLOGICAL.

Sussex Archæological Society.—The annual meeting of the Sussex Archæological Society took place on Thursday week at Rye. The attendance was not large, partly owing to the fact that the district had already been visited by the Society. The majority of the company came by special train from Brighton, and on arriving at Rye were met by Mr. George S. Butler, F.S.A., and the Rye Committee (headed by Alderman Judge, the mayor of the borough), and conducted at once to the Town Hall, where a museum of local antiquities was exhibited, Mr. Butler pointing out the principal features of interest. On leaving the Town Hall the company visited the parish church, a fine old structure, and various other places of interest in the neighbourhood, and afterwards partook of luncheon in the Assembly Rooms of the George Hotel. Ninety-four ladies and gentlemen sat down, presided over by Mr. J. G. Dodson, M.P.

Another Roman Altar Found.—The monthly meeting of the members of the Newcastle Society of Antiquaries was held on Wednesday fortnight in the Old Castle—Dr. Bruce presiding. The chairman said that, in addition to the altars found at Maryport, another one had been found, and it had this peculiarity about it—it was dedicated to the god Vulcan, and no other altar in Britain had been found dedicated to that deity. It had likewise this peculiarity, that the name of the god, instead of occurring first, as was usually the case, occurred last, the name of the dedicator being first. Another stone had been found, but not inscribed, having a mark very like a broad arrow on it.

Pictish Castles, or "Brochs."—The locality of the circular towers known as Pictish castles, or "brochs," has, till lately (says a Scottish paper), been supposed to be confined to the northern counties and islands of Scotland. The excavations just completed in the ruins on Cockburn Law established the existence of a genuine "broch" on the Lammermoor; but till now this is the only specimen between Ross-shire and the Borders of which the character has been clearly proved. The "broch" is a circular tower, with walls of great thickness, in which are ranged a series of vaulted chambers, sometimes connected by stone steps with upper galleries, and at others having narrow passages which open into the central area.

Building Intelligence.

CHURCHES AND CHAPELS.

Bedfield, Suffolk.—The chancel of Bedfield Church, near Framlingham, has been re-opened, after having been reseated and restored. A new roof of stained deal with curved ribs has been put up, covered with old tiles. The new seating is of oak, with carved stall elbows, and the floor paved with tiles in pattern. The new reredos is of Caen stone, with carved spandrels containing the lily, passion-flower, trefoil, oak, &c., and the panels, which are of slate, filled in with a painted and gilded floriated cross in the centre on a blue diapered ground, with emblems of the Trinity and texts on each side. The side panels contain the Lord's Prayer, Decalogue, and Belief in ornamental writing. Below the panelling the reredos is lined with glazed tiles in colours. The altar rail is, of oak, supported on iron scrolled and foliated standards. The work has been executed by Messrs. Vine & Day, builders, of Eye, and the decoration by Messrs. J. & J. King, of Norwich, under the superintendence of the architect, Mr. James K. Colling, of Hampstead-road, London.

Bohernabreena.—The new (Roman) Catholic church of S. Anne, Bohernabreena, Co. Dublin, has just been dedicated by the Bishop of Grahamstown, South Africa. The designs for the new building were furnished by Mr. J. J. M'Carthy, F.R.I.A.I. The style is French Gothic of the thirteenth century. It consists of nave and chancel with semicircular apse, north and south transepts with side chapels. It is lighted by five two-light tracery windows. The west end has a triplet of lancets and a Catherine-wheel window above. The roof is open-timbered, stained and varnished. The material used in the exterior is granite, finely chiselled.

Brighton.—The Earl of Shaftesbury on Monday last laid the foundation stone of the new chapel for the Countess of Huntingdon's Connexion in Brighton. The new chapel, which will be Early Decorated in style, is being erected on the site of the old building in North-street. It will have a handsome frontage, and be surmounted by a spire. The main entrance, in North street, will be by a triple archway, supported by columns, over which will be two windows, surmounted by a rich rose or wheel window. The south wall will be pierced by three windows, of which the central one—the "Sortain Memorial Window"—will have five lights. A light ornamental gallery will run along each side of the building. The chapel will measure 100ft. long, 40ft. wide, and 41ft. high, and accommodation will be provided for nearly 1,000 persons. The spire will be 112ft. high. Mr. J. Wimble, of London, is the architect, and Messrs. Myers & Sons, of London, are the builders. The total cost will be about £5,000.

Durham Cathedral.—The operations which have been going on for some time past in the way of removing the coating of whitewash from off the walls of the north aisle of the cathedral have now been completed. The improvements thus made have met with approval in the town, and the general feeling is that the work should be continued throughout the whole of the edifice. Whether this will be done is not yet known, but it is more than probable that, on the completion of the changes now pending, the Dean and Chapter will be in a position to give orders to the above effect.

Hopton Castle.—The parish church of S. Mary, Hopton Castle, Herefordshire, was re-opened for Divine service after complete re-building on Thursday week. It consists of nave, chancel, south porch, vestry, and sacristry, and there is a double bell-cote over the west gable in which the old bells are re-hung. The edifice is of stone, with open timber roof of pitch pine boarded inside, and the rest of the woodwork, including chancel stalls, and the seats throughout the church, are of the same material. The work has been carried out by T. Gough, contractor, Bishop's Castle, from designs by Mr. T. Nicholson, F.I.B.A., of Hereford, the diocesan architect.

Ludlow.—The foundation stone of a new Primitive Methodist Chapel was laid at Ludlow on Wednesday week. Mr. W. Russell is the builder, and Mr. J. Grosvenor the architect. The structure is to be of red brick, with white brick dressings, and in the Norman style of architecture. The interior will afford accommodation for more than 600 worshippers. Its estimated cost is £1,700.

Mole Brace, near Shrewsbury.—The ceremony of opening the tower of the parish church took place on the 11th inst. The tower, which is 25ft. 6in. wide, exclusive of buttresses, and about 100ft. to the highest point, is battlemented, and consists of four stages; in the upper stage are hung three bells, by Mears & Co., the framing for three more being provided. Since the consecration of the church in May, 1869, an alabaster reredos, by Earp, has been presented. The central subject is the resurrection of our Lord; on either side are niches containing figures of S. Thomas and S. Mary Magdalene. The north-east window of the apse has also been filled with painted glass; it contains nine panels, representing the Temptation, the Expulsion, the Sacrifice of Cain and Abel, the Finding of Moses, the Burning Bush, the Descent from the Mount, the Infant Samuel prophecying to Eli in the Tabernacle, the Building of the Temple, and the Angel appearing to Zachariah. In the head of the window is a *chorus angelorum*. The artists are Messrs. Morris & Co., of Queen-square, who executed the east window. The total cost of the church has been about £5,500, and the work has been carried out by Messrs. Bowdler & Darlington, of Shrewsbury, from the design of Mr. E. Haycock, architect.

Newbridge.—On Sunday, the 7th inst., the new church attached to the Convent of the Dominican Fathers at Newbridge, County Dublin, was solemnly blessed. The church, begun about three years since, has been erected from the designs of Mr. J. J. M'Carthy. The style is Early Gothic. It comprises a nave 90ft. by 30ft., terminated by a large semicircular apse, and lighted with lancet windows. Separated from the nave by pillars of polished Cork marble there is a chapel dedicated to Our Lady of the Rosary. Two stained glass windows (one representing the Ascension of our Lord) have been executed by Messrs. Earley & Powells, of the Camden-street Works.

New Cross.—On Friday last the new church dedicated to S. Peter, situated in the Wickham-road, New-cross, was consecrated by the Bishop of Rochester. The edifice is of the Early English Decorated style, and consists of a nave with aisles and transepts, terminating with a deep octagonal apse, with chancel chapels. The roof is supported by arches, and has a span of 43ft. clear. These arches rest on marble columns with carved capitals and Bath stone abutments, sustained by flying buttresses. There is a gallery at the west end occupying the lower portion of the tower, which is not carried up to the height it is intended to build it. The whole edifice will accommodate between 800 and 900 worshippers, and, when completed with north and south galleries it will seat 200 more. It has been erected by Messrs. Dove, of Islington, in accordance with the plans of Mr. Frederick Marrable, the architect, and when complete will cost about £10,000.

Ryhope.—The Bishop of Durham consecrated a new church at Ryhope on Wednesday week, the old village church having been found inadequate for the wants of the population. The new church has been erected in the cemetery, from designs by and under the superintendence of Mr. T. C. Ebdy, M.R.I.B.A., of Durham. The whole of the walls are of magnesian limestone from the beach, with freestone dressings. The columns and arches are in alternate bands of red and white freestone. The roofs are open timbered throughout, stained and varnished. The general arrangement consists of nave and chancel, south aisle, transept, vestry, organ chamber, and heating vault; a large tower on the south side of the north aisle and transept being omitted for the present. The church will accommodate 534 adults. The large window in the transept and the wheel window at the east end are filled with stained glass.

West Kirkby.—The church of S. Bridget, West Kirkby, was re-opened, after restoration at a cost of £3,000, on Thursday week. The church, which is in the Decorated style, consists of nave, chancel, north and south aisles, and a north chapel. The nave has an open-timbered roof, the trusses being supported on carved corbels. The chancel, which is arched and panelled, is divided from the north chapel by an arcading of three arches, the altar and the chancel arch being designed from the old moulded stones found during the excavations. The altar and the chancel are beautifully laid in Maw & Co.'s encaustic and glazed tiles. The church, which will seat 350 persons, has been rebuilt with stone from the Heswall hills.

BUILDINGS.

Burton (Dorset).—On Tuesday week the new school buildings which have been erected for the Dorset County School Company (Limited), at Burton, near Dorchester, were opened by the Ven. Archdeacon Sanctuary. The school buildings stand upon the summit of a hill, and are in the Venetian style. The principal façade faces the south-east, and consists of a centre pavilion of three stories, side wings, and end pavilions of two stories. The head-master's residence, the school department, and the domestic offices are entirely separated, although freely accessible each from the others. The principal or school entrance is in the centre pavilion, marked by a bold projecting hood carried on stone corbels. The dining hall is 70ft. by 28ft., lit with windows on each side. There are separate dormitories for the senior and junior boys, and baths, pantries, and other domestic offices are plentifully provided. The heating generally will be accomplished by ordinary open fireplaces, but the dining hall and drying room of the laundry will be warmed by the Rev. H. Moule's patent principle; earth closets and urinals are also provided on the same patentee's principle. Great care has been taken to secure abundance of light and ventilation throughout the buildings. The façades are faced with white Poole bricks, relieved with red in bands and arches, with Bath stone dressings. The roofs are slated. The hot-water apparatus, stoves, &c., were fitted up by Mr. John Galpin, of Dorchester. Accommodation is provided for 150 boys. The dining hall will for the present be used as a chapel, but it is intended at some future day to erect a detached chapel. The buildings have been carried out by Mr. G. J. Gregory, builder, of Dorchester, from plans by and under the superintendence of Mr. G. R. Crickmay, architect, Weymouth, Mr. Gerard being clerk of the works, and Mr. Chapman foreman. The cost has been upwards of £4,200.

Barnard Castle.—A magnificent mansion, museum, and picture gallery is being built for Mr. Bowes at Barnard Castle, at a cost of about £65,000. It is designed in the French Renaissance style of architecture, portions and details of which are taken from the Tuileries, in Paris; the Hotel-de-Ville, Havre; and other public buildings in France. The front and side elevations are of polished freestone, of a superior quality, from Dunn House quarries; they are four stories in height, with high mansard roofs, containing attics; the capitals of the columns, spandrels, trusses, brackets, and the panelling of the pilasters all elaborately carved. The cellars, which are in twelve compartments, are 210ft. in length by 45ft. in width, built entirely of dressed stone. The length of the south front is about 300ft.; the lengths of the side elevations about 135ft. each; the height of the centre pavilion is 115ft.; the height of the two end pavilions, 90ft., with a projection of 45ft. The basement story contains eighteen rooms, in addition to the cellars. On the ground floor, in the centre pavilion, is the entrance hall, with the grand staircase, which is 50ft. by 40ft., the interior walls of which are to be polished ashlar work, with carved mouldings and ornaments, and pilasters with marble panels. The steps will be of polished stone, 10ft. in width. On each side of the entrance hall, on the ground and first floors, are eight rooms, making sixteen rooms of large dimensions, most of which are from 30ft. to 40ft. in length, with wide corridors. These stories are 17ft. and 18ft. in height; the upper storey will contain about eighteen rooms of smaller dimensions; and above there will be eighteen or twenty attic bedrooms of good size and height. The centre pavilion will be carried up an additional storey, containing large rooms, from which a fine view of the beautiful surrounding country will be obtained. There are two picture galleries, each 200ft. long by 45ft. wide; the upper gallery being lighted from the roof, on the principle of the Pinacotheca at Munich, and made entirely fire-proof. It has been planned and designed by Mr. J. E. Watson, architect, of Newcastle-on-Tyne and Barnard Castle. The work is being executed by Mr. Joseph Kyle, contractor, of Newcastle-upon-Tyne, who is entrusted with the carrying out of the whole of the works. The boundary and other walls are being built by Mr. John Patterson, builder, Barnard Castle.

Chancery-lane.—Extensive additions have recently been completed to the building of the Incorporated Law Society, Chancery-lane. A handsome and commodious hall has been added, in which to carry on the numerous examinations which the society holds every year. Forty strong rooms have been added in the basement, and new coffee, drawing, and smoking-rooms added on the ground floor. Access to these rooms can be obtained from the entrance in Bell-yard (which has been considerably enlarged and otherwise improved), as well as from the old hall. Nearly the whole of the first floor of the new building is occupied by the new hall, which is capable of accommodating 200 students, and is approached by staircases from Carey-street and Bell-yard. The second floor of the new building comprises apartments for the resident clerk, and rooms for the deposit of the Society's papers. The whole of the additions and alterations have been carried out in accordance with plans prepared by Mr. P. C. Hardwick.

Church Gresley.—A new manufactory has just been commenced at Church Gresley, near Burton-on-Trent, for Mr. T. G. Green, in which it is proposed to carry out upon a large scale a novel process of casting earthenware, for which Mr. Green has secured several patents. The present works will be arranged in a series of parallel shops, each double range with six ovens being complete in itself, but admitting of indefinite extension in groups of six ovens; as the railway sidings, packing-shops and gloss-warehouses are at right angles to the main buildings. The architect is Mr. Gilbert R. Redgrave, of Kensington, London; and the builders Messrs. J. and H. Slater.

Dolgelley Market Hall and Public Rooms.—This building, which was opened on Thursday, the 11th inst., has been erected under the superintendence of Mr. W. H. Spaull, architect, of Oswestry, on a very commodious site in the centre of the town. It covers 4,960 super. feet, and contains a general market, 60ft. × 39ft., with four shops, kitchen, two bed-rooms, and four retiring rooms, an assembly room affording accommodations for 600 persons, with raised orchestra, and a spacious reading-room. The walls are of grey granite relieved by light Eyaith limestone dressings and arches. The contract was taken by Messrs. Humphrey, Jones, Rees, Owen, and Evan Morris, of Dolgelley. The total outlay for building, stalls, chairs, gas fittings, &c., was £2,200.

Newcastle-on-Tyne.—A new operating theatre and reception room, with a small pavilion ward of five or six beds, is about to be commenced at the east end of the Newcastle Infirmary. The infirmary (said Dr. Charlton, in his address last week as President of the British Medical Association) is an ancient building with modern additions, which themselves may now be looked upon as somewhat antiquated. Constructed originally more than a hundred years ago, a considerable addition was made to the building at the beginning of the present century. These additions were certainly not greatly to the credit of the architect, for the corridor was, as in a very recently-erected hospital in the south, carried along the south side of the building, while the wards were made to look out towards the gloomy north. Again, in 1852, three large double wards, containing 150 beds, were added at the west end, but this, though a vast improvement on the older parts of the building was open to the objection that it was not constructed on the pavilion system.

Proposed New Poultry Market.—The Markets' Improvement Committee of the Corporation have had under their consideration for upwards of a year the question of the best mode of utilizing the vacant land on the west side of the Metropolitan Meat Market and on the northern and southern sides of the western approach street to the Holborn Viaduct, and have come to the conclusion that the erection of a new poultry market for the city would be the most suitable appropriation of the sites in question. They base this recommendation on a previous report of their own, in which they urged that the vacant land ought to be made available, so as not only to be advantageous to the

Corporation in a pecuniary point of view, but also conducive to the interests of the inhabitants of the metropolis, and also on a statement drawn up by the City Architect at their request. In this document is laid before the committee, in general terms, the cost and returns of utilizing, for the purposes of a poultry market, that portion of land westward of the Meat Market, and on the south side of Charterhouse-street, now in their possession. He states that it might be assumed, in round numbers, that there are about 55,000ft. superficial of land in that block, with a frontage opposite the Meat Market of 200ft., and in Charterhouse-street of 270ft Of that, 17,000ft. might be expected to be devoted to gangways and passages, leaving, on the ground floor, 38,000ft. for shops, which, at the rate of 4s. 4d. per foot per annum, would produce £8,233. To this might be added £3,150, being the amount at which the basement might be let, and £2,167 for the occupation of the upper floor. The returns in all would amount to £13,550. Against this would have to be placed £5,000 for the annual value of the land, and £6,000 for the interest on the cost of building (£100,000), leaving £2,500 for expenses and outgoings, to which would be added the sum received for tolls. The architect adds that about £4,000 or £5,000, the probable moiety of the cost of forming the road on the west side of the proposed market, might be deducted from the value of the land. The committee, after a careful and lengthened deliberation, have approved of the architect's report, and recommended that they should be authorized to give directions for the preparation of a design, plan, and estimates for the proposed market.

Rotherham.—The Midland Railway Company has decided to erect a new station at Rotherham, in the place of the present one, which is found to be too small for the increasing traffic. The new station will be a light wooden structure, about 144ft. long, running parallel with Main-street, which connects Rotherham and Masbro'. The platform, which will be 460ft. long by 20ft. broad, will extend right over the river Don and will be covered in to the extent of the main building by a glass roof supported by light iron pillars. On the same level with the platform will be the booking offices, station-master's room, &c. The contract has been let to Mr. Chadwick, of Masbro', and the work is to be completed in four months' time.

Stornoway, N.B.—The large additions to the County Buildings at Stornoway, which are now finished, at a cost of upwards of £2,000, form a prominent feature in the appearance of the town as well as an extensive improvement in the court-house accommodation. The plans were prepared by Mr. Maitland, Tain, the county architect.

West London District Schools.—On Saturday, at Ashford, Middlesex, the foundation-stone of industrial schools for the poor children of the S. George's Union was laid. Mr. H. H. Collins, M.R.I.B.A., of 5, Queen-street, Cheapside, is the architect, whilst the building contract has been entrusted to Messrs. Joseph Bull & Son, of Southampton, at £43,000, although it is believed that with extras and fittings the gross cost will be about £60,000. The buildings are of the composite Italian style, of red brick and Bath stone facings, and the frontages of the buildings are placed parallel with the railway, so as not to encroach too much on the land, which will be used for farming purposes and probably for building, Ashford becoming an improving village. Connected with the main building is an exceedingly neat chapel, and also sufficiently detached from it are the quarantine wards, the infirmary, and fever and small pox hospital. The buildings will accommodate, in the main structure 700, infirmary 72, fever and smallpox 24, and reception wards 22; total, 818 children, exclusive of the accommodation provided for officers and servants.

◆

Steam Road-Rolling Company.—A prospectus has been issued of the Steam Road-rolling Company (Limited), with a capital of £5,000 in shares of £1, for the introduction into general use of heavy steam road-rollers for consolidating macadamized and other roads. It is proposed to let such rollers to parishes where they may be desired, or to contract for the performance of work. It may be hoped that the management of this undertaking will be such as to leave parochial authorities without any pretext for the continuance of a system of roadmaking that has long been a scandal to the metropolis.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

To Our Readers.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

Letters relating to advertisements and the ordinary business of the Paper should be addressed to the EDITOR, 31, TAVISTOCK STREET, COVENT GARDEN, W.C.

Advertisements for the current week must reach the office not later than 5 p.m on Thursday.

◆

Received.—R. D., J. H., H. H., G. H., B. & Co., H. W., F. & J., W. D. D., H. & Sons, J. P., J. P. J., G. A., W. B., E. H., L. E. H., J. H., J. D., J. T., Col. S., Rev. J. A. M., W. & Co., B. & S., W. D., H. K.

W. D. D.—Sketch may appear.
E. J. Hunt.—Sketch received.
H. H. Collins.—Will send or call and see.
E. J. M.—Sketch received.
J. R. T.—Sketch unsuitable. Returned.
T. C. W.—Sketch will appear.
S. B.—Thanks for suggestion.

Correspondence.

ARCHITECTS' PUPILS.

(*To the Editor of the* Building News.)

Sir,—Seeing no further notice has been taken of an article in your journal of July 24th, I beg to submit the following remarks upon the subject, which I trust will receive the same publicity as those earnestly made by "An Injured Pupil."

Certainly pupils do not like to make complaints to their tutors during the time of learning, neither would they wish to do so were they not compelled, but they feel it severely when their time is terminated and cannot find employment in consequence of so many pupils being admitted into the profession, and that too, in many cases, without an assistant or clerk of works being employed. The following may be given as one example from many others:—

An architect in one of our largest flourishing towns has at present the whole of his work carried on by four pupils and a clerk of works. As soon as the pupils have completed their time to the profession, they have (unless very lucky in getting some *poor* situation), to turn their hands to something else—perhaps go to college and spend a *little* more money in consequence of not having half been taught their profession. Besides, I am quite certain that *no* architect can attend properly to the advantage of their future welfare if he has more than two pupils at a time. But clerks of works (composed chiefly of ex-builders who have been at no expense in learning the profession), receive employment simply because they profess to know the practical part, and to take out quantities, which really the *pupil ought to be taught.* I ask the question—Is this fair to pupils? I say no. Can there not be something done to put a stop to the present sad state of affairs? I should like to see the subject taken up by your readers. Why should an architect have the advantage over a solicitor or stonemason? Why should a solicitor be compelled to take no more than two pupils, and a stonemason no more than one apprentice to every four men, and not allowed at one time to have more than three apprentices? Yet our most valuable profession is made a trap to catch any careless bird that likes to step in. I am, Sir, &c., Justice.

ANCIENT CROSS.

Sir,—The correspondent who submits the very interesting drawing of an ancient cross from Llantwit is silent as to the inscription. I take the letters to be very early English, with strong affinity to the Irish modifications of the Greek alphabet. So far as I can venture to guess, the language is Norman-French. I read the first line as—" "Oi nomme li Pater;" in the last line I find—"Pro anima reo;" which indicates that this was a royal memorial cross.

I should not like to guess further until I learn if the inscription is perfect; four lines seem intact, but may all be defective at either end; there are also certain fragments which seem to indicate that there have been six lines.

Perhaps this may be cleared up.—I am, Sir, &c.
August 12, 1870. A. Hall.

WHICH IS THE GROUND STORY OF A HOUSE?

Sir,—On Friday last I summoned a builder to the police court at Hammersmith for corbelling out a chimney at too low a level. Now his contention was that the ceiling level with the pavement was the ground floor; mine the opposite. The building in question is an ordinary house of four stories or floors: one floor several feet below the pavement level, one a few inches above the pavement, and over this there are two other floors; there is also a building or addition two floors high, commencing at the lowest level of the front building constructed at the back. The magistrate has adjourned the summons till Friday, the 26th of August, that evidence may be given by the profession as to which is really the ground floor or story.

My object in writing this is to ask as many of your readers as will take the matter up to be kind enough to write me personally on the subject that his Worship may have the opinion of the professional and building public.—I am, &c.,

T. E. Knightley, District Surveyor.
The Grove, Hammersmith.

THE TRANSMISSION OF TRACINGS ON LINEN PER BOOK POST.

Sir,—Having been in correspondence with our Post-office regarding the transmission of tracings on linen per book post, I now have the pleasure to hand you a copy of an official communication just received by me, which, besides being serviceable to those of your readers who have business connections in Belgium, will doubtless prove interesting also to the general public, as showing how ready the authorities are to act upon any suggestion which may conduce to its greater convenience.—I am, Sir, &c., W. Lloyd Wise.

Chandos Chambers, Buckingham-street,
Adelphi, London, W.C. August 15th.

General Post-office, London, August 13th, 1870.

Sir,—Since the receipt of your letter of the 9th of June last, I have been in communication with the Belgian Post-office, with the view of obtaining the consent of that office to the transmission of tracings on linen between the United Kingdom and Belgium, under the regulations of the book post, in the same manner as tracings on paper. Arrangements have now been completed, under which tracings on linen of an architectural or mechanical nature will be allowed to pass to Belgium at the book rate of postage.—I am, Sir, your obedient servant,

W. Lloyd Wise, Esq, Wm. Jas. Page.

HALIFAX BUILDING SOCIETY'S COMPETITION.

Sir,—The particulars of this competition were advertised in your journal last year; the building to cost only £5,000. The drawings have been sent in nearly seven months. No notice has yet been sent to the competitors that anything has been done. A poet has written something about "learning to labour and to wait,"—alas, the common lot of architects!—but surely it is time the Halifax Building Society's Directors were "up and doing." In any case the competitors will do well to have their hearts "prepared for any fate."—I am Sir, &c., A Victim.

CAMBERWELL CHARITY ESTATE COMPETITION.

Sir,—As I have seen no mention made in your paper as to the settlement of the competition for laying out the Camberwell Charity Estate in the Old Kent-road, for which thirty-six designs were sent in, and which were referred to Mr. Pownall, I beg to forward you a copy of the report in the *South London Chronicle* of the 30th ult.:—

"Mr. Pownall sent in his report upon 'Bowles' Five Acres,' in the Old Kent-road, and he, having examined all the plans and considered all the papers, decided that 'Spes' was entitled to the first premium of twenty guineas, and 'Vigilans No. 1' of ten guineas. The letters of the competitors were sent for, and opened, when it was found that the first successful competitor was Mr. Alfred Wright, architect, No. 68, Knowle-road, Brixton; and the second, Mr. A. G. Hennell, of Southampton-buildings."—I am, Sir, &c. Alfred Wright

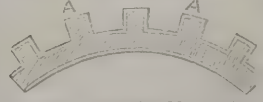
August 17, 1870.

Intercommunication.

QUESTIONS.

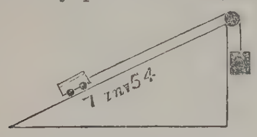
[1912.] FACTORY CHIMNEYS.—Would some of the readers of "Intercommunication" oblige me with their practical experience on the following points:—Is it good to put hoop iron longitudinal band in the courses of brickwork all round the chimney at different heights? What are found to be the best means of cramping and dovetailing the overhanging stone or fireclay cornices, and the blocking at the top of the chimney? Should the upper portion or any part of the chimney be built in cement?—Student.

[1913.] RETAINING WALL.—The accompanying sketch shows the way I am about to build a circular retaining wall, and I should be glad to know at what distance the buttresses A A should be built apart, and also if they should be of the same thickness as the wall itself. Is it best to build them as I have shown, with the sides sloped in the direction of the centre of the



curve of the face of the wall, or should they be built square both on the back and sides? If one of your correspondents would answer these questions for me I should feel obliged to him, as I want to get on with the job.—Contractor.

[1914.] SELF-WORKING GRADIENT.—I wish to apply the principle of a self-working gradient to some mines—that is, I require to make my road at such a gradient that the full waggon going down will pull the empty ones up. The only information I have been able to get from books is shown in the diagram, where the weight necessary to pull a lorry up an incline of a given ratio can be



calculated. But I cannot make this work out in my way to be of any use to me. Perhaps you can help me in your "Intercommunication." The weight of the empty waggons are ¾ cwt. each, and 3½ tons when full.—Miner.

[1915.] EVAPORATION.—What is the usual amount allowed for loss by evaporation from the surfaces of lakes and canals, or any large surfaces of water which are exposed to the wind and sun?—L. P. C.

[1916.] FLOORS.—As I am only a beginner, will you allow me to ask the meaning of "single" and "double" floors? I was reading a specification lately, and the floors were specified to be double. If any of your readers would kindly give me this information, and a small sketch of the two kinds, I should be thankful to him.—Apprentice.

[1917.] PLASTERING.—Can any one inform me from actual observation how much surface in two-coat work and three-coat work on brick can be covered with a given quantity of coarse stuff and fine stuff? Say coarse stuff composed of 1 cubic yard of chalk lime, 2 yards of sand, and 3 bushels of hair; and fine stuff, 1 cubic yard of lime, with 2 bushels of hair. From the various building works I glean that 1 yard of lime, 2 of sand, and 3 bushels of hair should cover 75 yards in two-coat, and 65 yards in three-coat work; but I cannot glean from this the proportion to each coat, or believe these figures to be very accurate. Also how much fine stuff can be obtained from one cubic yard of chalk lime, and is it usual in the London trade to add to the putty sand and hair, and in what proportions?—Hawkboy.

REPLIES.

[1906.] WEIGHT OF RAILS.—Your correspondent is not quite correct in saying that while the weight of rails is increased the traffic is pretty much the same. This may be true of the carriages but not of the engines, which, like the rails, are becoming heavier and heavier every day. The weight of the engine determines that of the rails, as can be easily shown; for let W be the total weight of the engine when in working order, and N the number of wheels, then $\frac{W}{N}$ will be the greatest load on any one wheel, and consequently the greatest load the rail will have to bear. Experience shows that if we multiply this by 2·75 we obtain the weight of the rail in pounds per foot run; therefore the weight of rail per foot in pounds $= \frac{2{\cdot}75 \times W}{N}$.—Steam.

[1907.] SHRINKAGE IN CASTINGS.—Let "J.M.D." go into the pattern-making shop and ask the foreman to let him look at his rule. He will find that it is ⅛in. longer than ordinary ones, and thus it is that the shrinkage is allowed for.—P. S. R.

[1907.] SHRINKAGE OF CASTINGS.—Pattern-makers should allow for cast-iron 1-8in. longer per lineal foot for shrinkage; brass, 3-16in. ditto; tin, 1-12in. ditto; lead, 1-8in. ditto; zinc, 3-16in. ditto.—J. B.

LEGAL INTELLIGENCE.

Slander.—Morley *v.* Nelson.—This was an action tried at Guildford on Saturday to recover damages for slander. In this case the record was withdrawn. Mr. Serjeant Ballantine stated that the plaintiff was an attorney, who was well-known in his profession, and the defendant, Mr. Marsh Nelson, was an architect and surveyor, who was also well known. The plaintiff had been retained by the defendant to act professionally on his behalf, and it appeared that in the course of the proceedings he made certain statements reflecting upon the honour and integrity of the plaintiff; but the defendant, in the most unequivocal and unqualified manner, now withdrew all the imputations that he had cast upon the plaintiff, and the record would therefore be withdrawn, the defendant paying the costs. Mr. Hawkins said that the defendant, upon consideration, felt that he had no ground for making the imputations upon the character of the plaintiff, and he therefore withdrew those imputations, and admitted that his conduct was unjustifiable. The learned judge observed that the expressions made use of by the defendant might have been understood to cast very serious imputations upon the character of the plaintiff, but these imputations had been withdrawn, and he considered the course that had been adopted to be very satisfactory. A nominal verdict was then recorded in favour of the plaintiff.

Original and Collateral Liability.—In the case of Mountstephen *v.* Lakeman (says a legal correspondent), the chairman of a local board, having verbally ordered a contractor to perform certain works, and the works having been completed in pursuance of such order, and the board having subsequently repudiated the authority of their chairman to give such an order, the contractor brought the present action in the Court of Queen's Bench. It was held that such an order did not create an original liability on the part of the defendant, but that it only amounted to a promise to answer for the debt of another within the meaning of the 4th section of the Statute of Frauds, and, as such, required to be evidenced by writing under the hand the party sought to be charged.

St. Mary's Chancel Gates, Taunton.—The application for a faculty to re-erect the gates in the chancel of S. Mary's Church, Taunton, again came before the Consistorial Episcopal Court at Wells on Tuesday week. Mr. Welsh, the proctor for the opponents, applied for further time in order to produce all the affidavits, which application was eventually granted, and the case was adjourned till the first Tuesday in October.

Disputed Contract.—Crump *v* Tooley.—This was an action for £10 12s. 7d. for work done under a contract, as alleged by plaintiff, and was tried at the Ramsgate County Court on Tuesday week. The plaintiff is a carpenter and joiner, and the defendant, till lately, was a builder, and had a sub-contract with a Mr. Wilson in reference to making the staircases for some houses. Eventually he relinquished his business and arranged with Crump to finish the work upon the agreement that he was to receive the amount due under the contract for the completion of the staircases, &c. It was admitted on both sides that the whole of the contract money had been paid to the defendant by Mr. Wilson, but the contention on the part of the defence was that Crump had only been employed as an ordinary workman, for which he had been paid his weekly wages. Witnesses were examined on both sides, and His Honour, believing the plaintiff's story to be correct, gave judgment for the amount claimed.

◆

LAND AND BUILDING SOCIETIES.

Irish Civil Service Building Society.—The annual general meeting of this society was held on Saturday. The secretary submitted the directors' report for the year ended 31st May last, from which it appeared that the receipts amounted to £57,547 12s. 7d., making a total of £187,278 4s. 10d. since the society was established six years ago. It further stated that the advances to members for building purposes and for the purchase of leasehold and freehold property, which in the five years ended May, 1869, amounted to £95,728 4s., had been increased to £127,633 14s. 8d., and the amount of assets, which for the period referred to amounted to £81,509 6s. 2d., had increased to £98,615 5s. 5d. After paying the usual interest of 5 per cent. on fully paid up shares at the same ratio, there remained an additional profit amounting to £2,382 4s. 8d., out of which the directors had declared a bonus at the rate of 2½ per cent., thus giving a return to the shareholders of 7½ per cent. per annum, free of income tax, and leaving a balance of £483 13s. 7d., out of which the directors recommended that £450 should be invested in fully paid up shares of the society, in the names of the trustees, in a reserve fund.

◆

WATER SUPPLY AND SANITARY MATTERS.

Ashford (Kent).—At a large meeting last week of the inhabitants of Ashford, convened by the Ashford Local Board, it was resolved to call in the assistance of Mr. Baldwin Latham, C.E., of Croydon, to inquire into the drainage of the town, and prepare a report.

Barnard Castle.—At the last meeting of the Barnard Castle Local Board of Health, a letter was read from the Home Office, stating, in reply to a memorial of the inhabitants, that the Home Secretary has directed an inquiry to be made into the water supply of the town, under the 49th section of the Sanitary Act, 1866.

Berwick.—The water supply at Berwick is at present very limited, and from want of flushing the sewers are in a very bad state, emitting very foul gases. The water is turned on (for domestic purposes) for a very short time each day, and a supply has to be carted from Tweedmouth for the use of the inhabitants. It has been agreed to invite Mr. Leslie, engineer, Edinburgh, to visit the neighbourhood, and report on the best scheme of water supply, and the cost of carrying it out.

Chesterfield.—At the meeting of the Chesterfield Town Council on Wednesday week, Dr. Black directed attention to the state of the water of the Rother, and produced numerous specimens showing considerable impurities, and also that the water was better where filter-beds were used. In one sample he said there was a considerable dark sediment, which consisted of excrementitious matter and other particles, amongst which he found two segments of tapeworm in very active operation. (!) If they carried the idea further (said Dr. Black) how many thousands, nay, millions of tapeworms must there be in the river? and supposing that water to be carried into the human system need they wonder at the prevalence of tapeworm? The one piece of practical advice he impressed upon the inhabitants was that during the present dry weather they should cease to use their water closets.

Eton.—The works for the main drainage of the town and college are being vigorously prosecuted during the college vacation. Tenders have been accepted and the work commenced The negotiations for the necessary loans have also been completed. The scheme adopted is known as the "separate system."

Handley.—Mr. Richard Coke, surveyor, of Chesterfield, is now engaged in making plans for water supply to Handley, Staveley, Woodthorpe, and Marsden Moor, and proposes impounding the water from the Barlow and Holmesfield district. This elevation would also enable Dronfield to be supplied at a reasonable cost, and an offer to that effect has been made by Mr. Coke to the inhabitants of Dronfield, who have not yet, however, accepted it.

Hurworth-on-Tees.—The report of Mr. Arnold Taylor respecting the main drainage of the village of Hurworth-on-Tees was received at a meeting of the vestry last week. Mr. Taylor reported that great danger to the health of the inhabitants arose from the continuous soaking and poisoning of the subsoil, in consequence of the drains in three or four instances ending in the gravel, and in others being open-jointed and made of porous field-tiles and drain-pipes. The effect of this was seen in the drinking water, seven samples of which were sent to Dr. Frankland for analysis. The majority of these contained a good deal of unoxidized organic matter of animal origin, and their use for domestic purposes would be attended with great risk to health. London sewage filtered through 5ft. of gravel was a better water than four of the samples. Under these circumstances, the Secretary of State desires the vestry to show cause within fourteen days why an order should not be made allowing two calendar months for the sewer authority to perform its duty by setting about the necessary works of sewerage, drainage, and water supply, as well as for the outfall and disposal of its sewage. The meeting resolved, "That the vestry take the necessary steps to perform its duty under the Sanitary and Sewage Utilization Acts, and that a special meeting of the vestry be summoned for the purpose of forming a committee under Section 4 of the Sanitary Act of 1866, also for the appointing of a vestry clerk, and other business."

The A B C Process of Utilising Sewage.—At a recent meeting of the General Purposes Committee of the Brighton Town Council, a letter was read from the general manager of the Native Guano Company (Limited), requesting the Town Council to support the company's application to the Home Secretary that a royal commission be appointed to examine into the merits of their A B C process of utilising sewage. The committee resolved, "That the town clerk do write to the Home Secretary, stating that as conflicting reports and opinions have been expressed concerning the value of the process of utilising sewage known as the A B C process, the Corporation of Brighton respectfully request the Home Secretary to grant the prayer of a memorial, which they are informed the Native Guano Company (Limited) have presented, for a Royal Commission to inquire and report as to its merits."

◆

STATUES, MEMORIALS, ETC.

Nice.—The monument to the late Mr. J. W. Prowse, the journalist, has been completed, and will shortly be placed over his tomb.

Stonewall Jackson.—Shortly after the death of the great Virginian general the foolish English admirers of that hero formed a committee, of which Mr. Beresford Hope, M.P., was treasurer, and Mr. W. H. Gregory, M.P., secretary. Their object was to erect a bronze statue of General Jackson in some public place within the state of Virginia. Subscriptions flowed in freely, and the work was entrusted to Mr. Foley, R.A. The ill-health of the artist delayed the work for some time, but we are now informed that the effigy will shortly be ready for casting.

◆

Our Office Table.

Lead Poisoning.—In an article on white lead, which appeared in the Building News on the 11th of March last, the writer deprecated the use, by painters and others, of gin or other spirituous liquor as a fancied antidote to lead poisoning. This view is confirmed, we see, by Dr. Charlton, who referred to the matter in his inaugural address last week as President of the British Medical Association. Dr. Charlton said:—"We have large lead-works on the Tyne, both of white lead and red lead, and our hospital is rarely without several cases of lead disease from the white lead factories. We often have this malady in its most aggravated forms, and it is observed that the women suffer much more than the men, as it is the former who are chiefly employed in handling and stacking the carbonate of lead. It has been maintained that the greater intemperance of the male workmen acts as a prophylactic against the lead poison; but we are inclined to refer their greater immunity rather to the nature of their work."

New Park in Manchester.—The new public park at Moss Side, named the Alexandra, in honour of the Princess of Wales, was formally opened to the public on Saturday. The new park covers 60 acres, and has cost £60,000. The other public parks in Manchester and Salford were presented to the inhabitants by a committee, which raised the necessary subscriptions in one year, and completed their gift in another. The new park is the first in Manchester of which the expense is defrayed out of the municipal funds.

Paving Streets by Steam.—A steam paving machine has recently been introduced in Paris, and made use of by the municipality for the repair of the streets of that city. This machine consists of a small steam-engine on wheels, drawn by one horse, to the rear of which is attached the "pavior," which is forced upon the ground by a blow from the piston, and slides on a bar some six feet long, and can thus be directed by the driver to any stone which requires forcing home. The machine was lately at work in the Rue de Grenelle, and is considered a success.

Meeting of the British Association.—The fortieth annual meeting of the British Association for the Advancement of Science will be held in Liverpool, commencing on Wednesday, September 14. The president elect is Professor Huxley, LL.D., F.R.S., &c.; the vice-presidents elect are the Right Hon. the Earl of Derby; the Right Hon. W. E. Gladstone, M.P., D.C.L., &c.; Sir Philip G. Egerton, Bart., M.P., F.R.S., &c.; Sir Joseph Whitworth, Bart., LL.D., F.R.S.; Mr. S. R. Graves, M.P.; Mr. J. P. Joule, LL.D., F.R.S., &c.; and Mr. Joseph Mayer, F.S.A. The Mayor of Liverpool (Mr. Joseph Hubback) is the chairman of the local executive committee, and Mr. H. Duckworth, F.G.S., officiates as local treasurer. The sections are :—A. Mathematics and Physics ; B. Chemical Science ; C. Geology ; D. Biology ; E. Geography and Ethnology ; F. Economic Science and Statistics ; G. Mechanical Science. These will meet each day, from eleven to three o'clock, in S. George's Hall, the Town-Hall, Free Public Library, and other places to be duly announced. The following is the programme of general and evening meetings :—Wednesday, Sept. 14—The first general meeting will be held in the Philharmonic Hall, at 8 P.M., when Professor Stokes, M.A., D.C.L., will resign the chair, and Professor Huxley, LL.D., F.R.S., will assume the presidency and deliver an address. Thursday —The Mayor's first reception at the Town-Hall. Friday—Lecture in the Philharmonic Hall, at 8½ P.M., by Professor Tyndall, LL.D., Ph. D. The Mayor's second reception at the Town-Hall. Saturday—Address to the working men in the Concert Hall, Lord Nelson-street, at 8 P.M., by Sir John Lubbock, Bart., M.P., F.R.S. Monday—Lecture in the Philharmonic Hall, at 8½ P.M., by Professor Rankine, LL.D., F.R.S. Tuesday—Soiree in S. George's Hall, at 8 P.M. Wednesday—Concert in S. George's Hall, at 8 P.M. Thursday —Excursions to several places. Messrs. W. Banister, B.A. ; R. Harrison, F.R.C.S. ; H. H. Higgins, M.A. ; and A. Hume, D.C.L., LL.D., act as honorary local secretaries.

TEMPLE BAR DOOMED.—Some fine morning soon (says the *Observer*) the Londoner will wake up bewildered and amazed to an entirely new world. Temple Bar is to be removed, and London will be London no more, but a large and somewhat similar city that happens to be built on the same site. The decree is about to go forth, and many months will not elapse before the grimy, worm-eaten door, and the heavy arch, with its statues of successfully-disguised personages and battered carvings, will disappear. It is part of Mr. Street's plan that Temple Bar should be removed, that Fleet-street should be widened at that point, and that a new archway of greater span should be erected, so as to communicate with the Temple and the New Law Courts. With the old archway will vanish the last of many historical associations.

STREET IMPROVEMENTS IN SOUTH LONDON.—In the parishes of Newington and Lambeth a great improvement is now in course of execution. A very large piece of ground, bounded by Newington Butts, Lower Kennington-lane, Renfrew-road, Kennington-road, Brook-street, and Prospect-place, is about to be laid out for building purposes; and several new streets, which will greatly conduce to the convenience of the inhabitants, are in course of formation. The lower part of this large open space, known as the East Park Estste (formerly the property of the late Sir Gilbert East) was built upon some seven or eight years since, the roads known as Hurley-road, Kempsford-road, Gilbert-road, and Renfrew-road, being formed at that time. The only approach to all these roads is by Hurley-road, which at one end leads into Kennington-lane, but the other end, and the ends of several other roads, although coming up to the back of the Kennington-road, have no approach therefrom, and the inhabitants on the estate wishing to go to Kennington-road or Westminster-road have consequently hitherto had to make a long circuit; but some of the roads above-named are about to be opened out to Kennington-road, while through that part of the enclosed space not yet built upon —extending from the back of Mr. Spurgeon's Tabernacle and Newington Church to Kennington-lane on the one side, and to Brook-street, Kennington-road, on—the other several new streets are to be made. Two are now in course of formation, viz , one leading from the east end of Brook-street to Newington Butts, a few doors below the church, and one leading from Renfrew-road (by the side of the new Lambeth Police-court) to the road just spoken of as being in course of construction.

NORTH OF ENGLAND INSTITUTE OF MECHANICAL AND MINING ENGINEERS.—The annual general meeting of the members of this Institute was held on the 6th inst., in the lecture-room of the Literary and Philosophical Society, Newcastle. Mr. E. F. Boyd, President, occupied the chair Three new members and one graduate were elected, and ten gentlemen were nominated for election as members at the next monthly meeting. The reports of the Council, Finance, Technical Education, and Safety-Cage Committees were read to the meeting. The Council, in their report for the year, whilst congratulating the members on the continued prosperity of the Institute, expressed their regret at the loss they had sustained by the deaths of Mr. John Hedley, Mr. T. Y. Hall, and Mr. J. J. Atkinson. The reports were adopted, and the officers and council for the ensuing year were elected, Mr. E. F. Boyd being re-elected President. Mr. Boyd briefly thanked the members for the honour thus done him, and the proceedings terminated.

RECOGNITION OF A SURVEYOR'S SERVICES.—At a meeting of the Hastings Town Council on Friday week, Mr. Alderman Ross drew attention to the services of Mr. Andrews, the town surveyor, in reference to the successful termination of the town drainage scheme devised by him. He (Alderman Ross) considered that Hastings was the best-drained town in the kingdom, and much of the credit was due to Mr. Andrews, who acted not only as surveyor, but also as engineer ; and under these circumstances the Council ought to acknowledge his services in a most substantial manner. The neighbouring town of S. Leonards paid the engineer of their scheme £869, and at the same rate, according to the Hastings outlay, the Council would have to pay £2,607. The matter was referred to the Roads Committee for consideration.

THE ORGAN AT ETON COLLEGE CHAPEL.—The organ at Eton College chapel having undergone extensive alterations, it became necessary to enlarge the organ loft and add very much to the fine oak carved work enclosing it. The work was entrusted to Mr. T. Stopher, of S. Matthew's, Ipswich, and the first portion has been executed and fixed. This portion consists of three heavy moulded arcades, supported by oak clustered columns, to carry the organ loft on the west side or ante-chapel. The second part consists of overhanging tracery work on the last, or chapel side, and is divided into panels with deep moulded double cornice and panelled soffit. The upper part is surmounted with perforated screen-work, and forms the organ-player's floor. This part of the work is complete, but there yet remains to be executed the most elaborate part of the work, which consists of an entire west front, and which, when complete, will have a very imposing appearance. The organ will be one of the finest in the kingdom, and the beautifully carved loft, with its fine and richly decorated screen of perforated work, will be a worthy receptacle for it.

THE METROPOLITAN BOARD OF WORKS.—It is stated that Lord Robert Montagu, M.P., has, at the suggestion of friends in London, been induced to become a candidate for the chairmanship of the Metropolitan Board of Works, he having taken an important part, as Chairman of the House of Commons, in the question of the profitable utilization of the sewage of the metropolis and other large towns. There is also an ominous rumour that Mr. Ayrton intends to take possession of the post, and so, as Chief Commissioner, and Chairman of the Metropolitan Board, manage matters with a strong hand. Probably after the late rebuff to pluralism, as administered to the Attorney-General, this will not be attempted. Some radical change is, however, intended, as notice is stated to have been sent to the Board that any member accepting the office of Chairman will do so subject to the abolition of the office hereafter by Parliament.

INTERNATIONAL EXHIBITION OF 1871.—We are requested by her Majesty's Commissioners to state that there is no foundation for the rumour that the International Exhibition appointed for 1871 is to be postponed by reason of the war. The first of the series of Annual International Exhibitions of Selected Works of Fine and Industrial Art and Scientific Inventions will take place next year, as already announced.

PROPOSED TRAMWAY THROUGH SHOREDITCH TO HACKNEY.—At the last meeting of the Bethnal Green Vestry, the Works Committee reported that they had considered the proposed scheme submitted to the Vestry by Messrs. Day and Hassard for the construction of tramways leading from the City to Shoreditch, and thence to pass through Hackney-road, Bethnal-green-road, Old Ford, and Clapton, and recommended that, provided proper provision be made to protect the public interests, no opposition be offered to the scheme. The recommendation of the Committee was adopted, and it was incidentally stated that Miss Burdett Coutts, who was one of the promoters of the scheme, intended to widen Gibraltar-walk and carry the tramway lines on to Columbia Market.

STONES OF MANY FORTUNES.—The destruction of buildings, or rather the using up of old building materials, has been going on in Asia for some three thousand years, and perhaps more. A stone once squared has always a utilitarian designation, and the catastrophes of earthquakes and fires lead the people to have little regard for monumental stones, and to turn every available material to account. Thus there are stones which have figured in many various capacities. Worked up for a Persian palace, they have been stuck into the inclosure of a Greek temple ; from this transplanted on emergency to the fortifications ; chosen to build up a Christian church ; taken away to repair the walls against a Gothic, a Saracenic, or a Genoese invader ; figuring in a Genoese factory or fortress ; selected by the Seljuks or the Osmanlis for the pillar of an aqueduct. Tumbling down, they are put as a tomb over the grave of some traveller or pilgrim, used as a boundary-mark for land, or worked up in a peasant's chimney. The worst fate is to be burnt in a kiln for lime. This is the doom of marble, from which sandstone is exempt.

◆

Chips.

It has been resolved to rebuild the church of S. George, Easton-in-Gordano, at a cost of £2,000.

A new church at Halifax has just been consecrated. The church, which has cost £8,000, has been presented by Mr. Michael Stocks, of Upper Shildon Hall.

The Mayor of Bradford laid the foundation stone of the new town-hall on Wednesday week. The cost of the building will be £43,000, exclusive of site. Messrs. Lockwood and Mawson are the architects.

A beautiful Norman font, carved in Caen stone, has just been placed in the chapel of Holy Trinity, Bolton, near Alnwick.

It is proposed to erect a new bridge 30ft. wide at Peterborough, at a cost of £6,000. The counties of Huntingdonshire and Northampton have each promised to contribute £2,000, and £1,400 in addition has been subscribed, leaving a deficit of only £600.

A statue to Sir James Outram is to be placed on the Thames Embankment North.

The foundation stone of a new church was laid at Middleton-one-Row, near Newcastle, on Saturday.

It is proposed to erect an ornamental drinking fountain at Crawley, in memory of the late Mark Lemon.

The fabric of the parish church at Ash, Kent. has been examined by an architect, who has given it as his opinion that, in consequence of the effects of dry rot, it will be necessary to renew nearly all the timberwork of the building.

The foundation stone of a new Primitive Methodist chapel was laid at Wood Mill, Yoxall, on Tuesday last.

On Wednesday last the memorial stones of a new Wesleyan chapel at Burton on-Trent were laid.

The office of Surveyor to the Home Highway Board, Canterbury, is vacant.

A plot of land, containing 4,000 square yards, has been purchased in Seacombe, as the site of a new Roman Catholic church and presbytery.

◆

Timber Trade Review.

The present state of affairs on the Continent makes a list of prices actually paid of more than ordinary value. Freights have risen in consequence of so many vessels being idle, and foreign houses will not be slow to make the stoppage of the supply of Prussian timber and deals an excuse for increasing their prices. The sale on August 17 consisted of

150	Loads	Dantzig and Stettin fir
200	,,	Stettin oak do.
400	,,	Quebec and Halifax birch
150	,,	Quebec walnut
100	,,	Quebec red and yellow pine
250		Memel and Riga wainsco logs
250		Quebec do.
75,000		Quebec and Saguenay yellow pine deals, &c.
50,000		Quebec and Saguenay spruce
25,000		Lowerport spruce
20,000		Riga white
25,000		Skonwick and Gefle
20,000		Hudikswall and Sundswall
70,000		Dram, Christiana, and Vefsen
10,000		Other Swedish and Norway
90,000		prepared flooring boards
250	Fathoms	firewood
		Palings, laths, architraves, &c., &c.

For which the following prices were obtained :—

	£ s.		£ s.
Archangel 3rd yellow per Petg. std.	8 10		
Bathurst unsorted spruce .. 120 12 3 × 9	12 10	to	13 15
Christiana 2nd yellow 2½ × 6½	7 0		
Do. 3rd do.	6 10	,,	6 15
Do. 2nd white 3 × 9	13 15		
Do. 3rd do. 2½ × 6½	6 5		
Dantzig lathwood cub. fthm.	5 15	,,	6 0
Dram 2nd yellow 120 12, 2½ × 6½	7 0		
Do. 3rd do.	6 10	,,	7 5
Do. 2nd white do.	6 5		
Do. mouldings 100 foot run	Bought in		
Do. yellow balks load	1 15	,,	2 0
Escoumains spruce 120 12, 3 × 9	14 10		
Fredrickstadt white 2½ × 6½	5 10		
Do. architraves 100 foot run	Bought in		
Do. mouldings	do.		
	s. d.		s. d.
Do. laths ½ × 5-16	0 2	to	0 3
Do. palings 4ft. 120	5 9	,,	6 0
	£ s.		£ s.
Borga yellow 3 × 7 per Petg. std.	7 0	to	7 5
Do. ends	5 5		
Gefle 3rd yellow	7 10	,,	8 10
Do. mixed	10 10	,,	11 0
Do. mixed whitewood	9 5		
Gothenburg 3rd yellow	8 10		
Hudikswall 1st yellow	9 10	,,	11 0
Do. 2nd do. 4in.	9 0	,,	10 0
Do. 3in.	9 10	,,	10 0
Do. 2½in.	8 15	,,	10 5
Do. 1¼in.	8 15	,,	9
Do. 3rd yellow 4in.	8 15	,,	9 10
Do. 3in.	8 15	,,	9 0
Do. 2½in.	8 0	,,	9 5
Halifax birch load	2 10		
Jacobs adt 1st yellow per Petg. std.	9 0		
Laurvig 1st white	7 5		
Miramichi unsorted spruce...129 12 ...3 × 9	13 5	,,	13 15
Memel crown logs 18f . cube	4 2		
Do. 2nd crown	Bought in		
Munksund 1st yellow per Petg. std.	10 0	,,	11 5
Pugwash spruce 120 12, 3 × 9	12 0	,,	13 0
Pensacola pitch pine 2in. per Petg. std.	11 15		
Petersburg lathwood 8ft. fresh cub. fthm.	6 0	,,	6 5
Do. 1st yellow 3 × 7 per Petg. std.	10 5	,,	12 0
Do. 2¼ × 7	12 0		
Do. Gromoffs 1st white 3 × 9	10 0		
Quebec 1st bright yellow pine broad	20 0		
Do. 1st dry floated	14 0	,,	17 0
Do. 1st floated	13 0	,,	16 0
Do. 2nd bright	11 15		
Do. 2nd floated 12ft. 3 × 11	12 0	,,	12 10
Do. 2nd dry floated do.	12 10	,,	12 15
Do. 3rd floated	9 0	,,	9 10
Do. 3rd dry floated 12ft. 3in.	9 10	,,	10 5
Do. 1st spruce 120 12, 3 × 9	16 0	,,	18 10
Do. 2nd do.	14 15		
Do. 3rd do.	12 10	,,	13 10
	s. d.		s. d.
Do. black walnut foot cube	2 6	,,	3 0
	£ s.		£ s.
Do. birch load	2 11	,,	3 0
Do. wainscot logs 18ft. cube	2 5		
Do. Waney yellow pine load	3 5		
Do. red pine	3 2	,,	3 3
Riga brack wainscot logs 18f . cube	2 15		
Do. crown white per Petg. std.	8 10	,,	8 15
Do. half crown do.	7 15	,,	8 0
Rimouski 1st spruce 120 12, 3 × 9	13 0		
St. John's unsorted spruce	14 5		
Stettin oak load	5 10		
Do. oak crooks	5 10		
Do. fir timber	3 5		
Saguenay 1st yellow pine per Petg. std.	18 0	,,	19 0
Do. 2nd do.	11 5	,,	12 10
Do. 3rd do.	8 15	,,	9 5
Do. 1st spruce 120 12, 3 × 9	16 0	,,	17 0
Skonwick mixed yellow 4in., per Petg. std.	10 5	,,	10 15
Do. 3rd do. 4in.	9 10		
Do. 3in.	9 10	,,	9 15
Sundswall mixed yellow 4in.	10 0	,,	10 10
Do. 3in.	9 0		
Skelleftea mixed yellow 2½in.	9 0		
Do. 3rd do. 2½in.	8 10		
Tornea mixed yellow	8 0	,,	9 10
	s. d.		s. d.
Do. palings 1¾ × 3 120pcs.	12 6		
[Prepared Flooring.]	s. d.		
Petersburg 1st yellow square 1¼in.	13 0		
Do. ⅞in.	8 0	to	9 6
Do. 1in.	9 6	,,	11 0
Do. 2nd yellow 1¼in.	10 3	,,	12 0
Do. 1in.	9 0		
Do. ⅞in.	7 3	,,	8 0
Do. 1st white 1in.	10 6		
Do. ⅞in.	8 0		
Do. 2nd do. 1in.	7 6	,,	9 0
Do. ⅞in.	7 3	,,	7 6
Dram 1st yellow 1¼in.	13 3		
Do. 1in.	10 0	,,	10 3
Do. ⅞in.	8 0	,,	8 3
Do. 2nd do. 1in	8 9		
Do. 1st yellow, G. T. and B. ⅝in.	5 3	,,	5 9
Véfsen staves 32in. 1200 pcs.	30 0		
Do. 30in. do.	38 0		
Spruce palings 1 × 3 120 pcs.	7 6		
	£ s.		£ s.
Porsground 3rd yellow per Petg. std.	6 15		
Do. white balks load	1 5	,,	1 8

THE TIMBER TRADE OF GRIMSBY.—In consequence of German vessels being thrown out of competition in carrying cargoes of timber to England, freights have advanced immensely. For two years past freights had been ruling very low, but the outbreak of war had its immediate effect in producing a reaction, and charges for carriage of timber cargoes advanced rapidly. The supplies of timber from the Prussian ports of Memel, Dantzig, and Stettin being now cut off, has naturally caused an increased demand for Swedish and other goods, and this, combined with the rise in freights, has produced an advance of prices in the trade generally of about 10 per cent. The merchants, however, who have stocks on hand of log timber from the three Prussian ports named put an additional value of 40 per cent. on these goods from the prices current before the declaration of war. The success of the German forces has not produced any downward tendency.

LATEST PRICES OF MATERIALS USED IN CONSTRUCTION.

TIMBER.

Teak load	£12 0	13 0
Quebec, red pine	3 15	4 15
,, yellow pine	4 0	4 15
St. John N.B. yellow	0 0	0 0
Quebec Oak, white	6 0	6 10
,, birch	3 15	5 0
,, elm	4 5	5 5
Dantzic oak	5 0	6 10
,, fir	2 5	4 5
Memel fir	3 0	4 0
Riga	3 0	4 0
Swedish	2 10	3 0
Masts, Quebec red pine	3 10	5 5
,, yellow pine	3 15	5 5
Lathwood, Dantzic, fm	3 15	5 10
,, St. Petersburg	5 10	6 10
Deals, pr C., 12 ft. by 3 by 9 in.,		
Quebec, white spruce	12 10	18 0
St. John, white spruce	12 10	14 0
Yellow pine, per reduced C.		
Canada, 1st quality	16 10	18 0
2nd do.	12 0	12 10
Archangel, yellow	11 10	13 0
St. Petersburg, yel.	11 10	13 0

Finland	£7 0	£8 0
Memel	7 0	9 0
Gothenburg, yellow	9 0	11 0
,, white	8 0	9 0
Gefle, yellow	10 5	12 10
Soderham	8 10	12 0
Christiania, per C., 12 ft. by 3 by 9 in. yellow	10 0	12 10
Flooring boards, per sq. of 1in., first yel	7 6	10 6
First white	7 0	9 6
Second qualities	6 6	7 6
PUMICE STONE pr ton	6 0	8 0
OILS, &c.		
Seal, pale per tun	37 0	37 10
Sperm body	84 0	85 0
Cod	39 0	40 0
Whale, Sth. Sea, pale	37 0	37 10
Olive, Gallipoli	50 0	0 0
Cocoanut, Cochin, ton	42 10	44 10
Palm, fine	39 10	0 0
Linseed	39 10	0 0
Rapeseed, Eng. pale	44 10	44 15
Cottonseed	29 0	35 0

METALS.

LEAD —

Pig, Foreign	per ton	£18 15 0	£19 5 0
,, English W.B.	do	20 5 0	20 15 0
,, Lead Co.	do	20 5 0	20 15 0
,, Other brands	do	19 10 0	20 0 0
Sheet Milled	do	20 10 0	0 0 0
Shot, Patent	do	21 0 0	21 10 0
Red or Minium	do	19 15 0	20 10 0
Litharge, W.B.	do	0 0 0	0 0 0
White Dry	do	30 0 0	0 0 0
,, ground in oil	do	0 0 0	0 0 0

COPPER :—

British—Cake and Ingot	per ton	£69 0 0	70 0 0
Best Selected	do	71 0 0	[illegible] 0 0
Sheet	do	75 0 0	78 0 0
Bottoms	do	78 0 0	80 0 0
Australian	do	69 0 0	73 10 0
Spanish Cake	do	0 0 0	0 0 0
Chili Bars	cash	63 0 0	64 0 0
,, refined ingot		6[illegible] 0 0	73 10 0
Metal Sheathing and Rods	per lb.	0 0 6⅜	0 0 6¼

Trade News

WAGES MOVEMENT.

THE NINE-HOUR MOVEMENT IN THE BUILDING TRADE.—The committee of the carpenters and joiners of London for carrying out the above movement have called an aggregate meeting of the trade for the 25th inst., when the new code of working rules, embodying nine working hours per day, at the present rate of payment, 8d. per hour, is to be submitted for approval and adoption. If agreed to, the code of rules will be printed and sent to every employer in the London district for their assent thereto, or, if necessary, a conference thereon. By reducing the working hours from 56 to 50 per week the men sacrifice 4s. per week in wages, but they look for compensation in more regular employment and less competition by a reduced surplus-labour market. The new code of working rules also abolishes piece-work and systematic overtime

TENDERS.

CLOWNE (DERBYSHIRE).—For the erection of a rectory house for the Rev. C. L. Helps. S. Rollinson, architect, Chesterfield.

Messrs. Waterlow and Sons (accepted)...£1057

EPSOM.—For mortuary chapels, lodge, boundary walls, &c., for the Epsom burial board. Mr. W. S. Trehearne, architect. Quantities by Messrs. Wright and Dresser.

Nightingale	£5927 0 0
Pollard	5600 0 0
Spicer	5084 11 8
Colls and Sons	4780 0 0

ERITH.—For public hall. Mr. Herbert Ford, architect.

Willis	£1486 15 0
Building Co.	1403 15 0
J. Blake	1323 0 0
Harrison and Edwards	1309 0 0
T. Blake	1294 1 2
W. Tongue	1235 0 0

FULHAM.—For erecting a villa residence at Laurel Bank, Fulham, for Mr. J. Rooth. Mr. J. T. Newman, architect. (Quantities not supplied).

Blease	£2400
Aldhouse	2261
Wigmore (accepted)	1861

JARROW-UPON-TYNE.—For the erection of a United Presbyterian Church, Jarrow-upon-Tyne. Mr. Joseph John Lish, architect. Quantities supplied. Architect's estimate, £3400.

W. Scott	£4065 19 1
Crick and Armstrong	3673 2 3
J. Milburn	3668 5 10
J. A. McNurtrie	3605 14 3
G. Waugh	3421 3 7
T. Robson	3408 5 7
J. Aisten	3404 10 0
D. Kennedy	3387 6 10
W. Weatherald	3360 8 0
T. Turnbull	3354 0 0
T. Heppel	3335 8 1
R. Whichello	3329 0 0
N. and R. Reed	3252 10 0
T. Morris	3250 0 0
R. Wylam (accepted)	3170 16 6

WESTMINSTER.—For repairs, &c., to offices of Colt's Fire Arms Company, 14, Pall Mall. Mr. Arthur Cates, architect, 7A, Whitehall-yard.

Cooke and Green	£389
Paulsford	369
Sykes (accepted)	294

KENTISH TOWN.—For erecting Brookfield Schools, Kentish Town. J. P. Seddon, architect. (Quantities not supplied.

Williams and Co.	£3400
Belham	3079
Henshaw	2979
Wigmore (accepted)	2789
Wheeler	2272

LIVERPOOL.—For the Toxteth Tabernacle, Park-road, Liverpool. W. J. Mason, architect. Quantities by Geo. Northcroft, Liverpool.

Edwd. Hughes	£5700
Rome	5700
Jones and Co.	5630
Urmson	5587
Tomkinson	5550
Bentham	5400
Witter	5389
Bridge	5310
Nicholson and Ayre	5277
Haigh and Co. (accepted)	5260

LONDON.—For repairs at the Licensed Victuallers' Asylum, Old Kent-road. Mr W. F. Potter, architect.

R. C. Cook	£187 0 0
Geddes	135 0 0
Percy	118 18 6
Devereux	110 0 0
Brand	100 0 0
Beeton	88 14 6
Day	79 0 0
Hayward (accepted)	77 0 0

POTTER'S BAR.—For additions to a residence at Little Heath, Potter's Bar. Mr. Blashill, architect.

Gammon	£4199
Hill, Keddell and Waldram	3276
Conder	3200
Axford and Whillier	3197
Patman Bros.	2399
Colls and Sons (accepted)	2728

SOMER'S TOWN.—For repairs, painting and decoration of S. Mary's Church, Somer's Town. James K. Colling, hon. architect.

Nash	£59[illegible] 0 0
Eyers	412 12 8
Mann (accepted)	389 0 0
Henderson (too late)	384 10 0

SYDENHAM.—For the extension of the orangery at the Crystal Palace. Charles H. Driver, architect. Quantities supplied by Mr. T. Nixon.

Jackson and Shaw (accepted)..........£3200

WARE.—For drainage works at Ware, Herts., for the Local Board of Health.

Brown (accepted) £5855 17 9

WOOD GREEN.—For two new wings to the Printers' almshouses, Wood Green. Charles Bell, architect. Quantities supplied by Mr. T. Nixon.

Henshaw (accepted) £3314

BATH STONE OF BEST QUALITY.

RANDELL, SAUNDERS, and COMPANY, LIMITED. Quarrymen and Stone Merchants, Bath. List of Prices at the Quarries and Depots; also cost for Transit to any part of the United Kingdom, furnished on application.

BATH STONE OFFICE,
[ADVT.] Corsham, Wilts.

CONTRACTS OPEN FOR BUILDING ESTIMATES.

ST. MARY ABBOTT'S, KENSINGTON, Sept. 7.—For the erection of a new infirmary and other buildings adjoining their workhouse. Ruben Green, Clerk to the Guardians, No. 1, Devonshire-terrace, Wright's-lane, Kensington.

BRADFORD, Aug. 22.—For the various works required in the taking down the present buildings, and in the erection of the Boar's Head Restaurant, in Market-street. Milnes and France, architects, Cheapside, Bradford.

LANCASHIRE AND YORKSHIRE RAILWAY, Aug. 23.—For the erection of a stationmaster's house, and waiting shed at Sough Station; of a new station at Pemberton; and of a timber footbridge over the railway at Oldham. W. S. Lawn, secretary, Hunt's Bank, Manchester.

SWINDON, WILTS, Aug. 23.—For the erection of new parochial schools, with teacher's residence. Lansdown and Shopland, architects and surveyors, Swindon, Wilts.

CHORLTON UNION, Aug. 23.—For painting the whole of the outside work at the workhouse at Withington. Wm. N. Edgill, Clerk to the Guardians, Chorlton Union Offices, Grosvenor-square, All Saints', Manchester.

CLECKHEATON LOCAL BOARD, Aug. 22.—Gas Works Department.—For the construction of ten brick gas retorts. David Hirst, Clerk to the said Board, Cleckheaton.

CROYDON LOCAL BOARD OF HEALTH WATERWORKS, Aug. 30.—For the construction and erection of a condensing pumping engine. R. J. Cheesewright, Clerk, Town Hall, Croydon.

CROYDON LOCAL BOARD OF HEALTH WATERWORKS, Aug. 30.—For the manufacture and delivery at Croydon of cast-iron socket pipes. R. J. Cheesewright, Clerk, Town Hall, Croydon.

SHEFFIELD, Aug. 31.—For the erection of a villa residence, in Clarkhouse-road. Hill and Swann, architects, Times Buildings, Sheffield.

LEEDS, Aug. 24.—For the erection of six houses, at Armley, near Leeds. James Snowdon, architect, 78, Broomfield-terrace, Bradford.

LEEDS, Aug. 24.—For the erection of new offices for the Imperial Insurance Company, in Bond-street. Stephen Ernest Smith, architect, 39, Park-square, Leeds.

THE BUILDING NEWS.

LONDON, FRIDAY, AUGUST 26, 1870.

THE CASTLES OF HEREFORDSHIRE.

HAVING lately given a summary of the castles and castellated mansions in Shropshire, we propose now, in continuation of the series, to give a short account of those in the neighbouring border county of Herefordshire. Our principal authority is a work by the Rev. Charles Robinson, Vicar of Norton Canon, and chaplain to the Earl of Caithness (published by Longman & Co., of London, and Head & Hull, of Hereford), a work of careful research, illustrated with anastatic reproductions of pen-and-ink drawings of but moderate excellence.

The following alphabetically-arranged list of the castles mentioned by that author is in itself interesting, and may be useful to such of our readers as may be inclined to pursue their personal investigations among these relics of a byegone age. They have been hitherto treated, as Mr. Robinson alleges, with unmerited neglect, although many of them still present architectural details of a high order, and even a refined delicacy of execution and design. The list does not exclusively apply to the true castle or Norman fortalice, but embraces all fortified mansions erected before the union of the Houses of York and Lancaster to which the appellation of *Castra* has been given in documents :—

Almeley
Ashpecton
Brampton Brian
Bransill
Bredwardine
Clifford
Comfort
Croft
Cublington
Cusop
Dorston
Eardisley
Eaton Tregoz
Eccleswale
Ellingham
Ewyas Harold
Frome Castle
Goodrich
Hereford
Huntingdon
Kilpeck
Kingsland
Kington
Kinnersley
Lingen
Longtown
Lyonshall
Moccas
Mortimer's Castle
Pembridge
Penyard
Richard's Castle
Snodhill
Stapleton
Sutton
Tretire
Twyford
Wrishay
Weobly
Whitney
Wigmore
Wilton

Of these, certainly Goodrich, of which we lately gave an account, is the best preserved and most interesting.

Almeley, though utterly destroyed, deserves mention as having been the residence, according to tradition, of Sir John Oldcastle, Lord Cobham, the Lollard martyr of Brampton Brian Castle, which belonged to the Harleys. An entrance gateway of the time of Edward III., with low circular towers at the sides, remains. It has a pointed arch of good proportions, and a string-course above ornamented with trefoil ball flowers. There are also portions of the later domestic buildings in the interior of the court. A paper upon this structure, by Mr. R. W. Banks, is to be found in the "Archæol. Cambrensis," 3rd s., vol. xiii.

The ruins of Bransill Castle are in a glen of the Malvern Hills. It was a castellated mansion of late date—a quadrangle of about forty yards on each side, with octagonal towers at the angles, and a gateway on the western side ; and two moats twenty yards apart surrounded it ; and Croft Castle was a similar quadrangular building, with circular towers at the angles.

Hereford Castle was in circuit "nearly as large as that of Windsor," and "one of the fayrist, largest, and strongest in all England." It only now survives in the names of Castle Green, Castle Mill, and Castle-street, which occupy its site. Its plan is, however, easily to be gathered from Leland's description, and a view by Speed. Mr. Robinson thus describes it—"On the southern side the river Wye, the bank of which fell almost perpendicularly seven yards, formed a natural defence, and round the whole area of the castle ran a semicircular wall, defended with towers and strengthened with a wet moat. The entrance was on the north-eastern side, over a great bridge of stone arches, with a drawbridge in the middle ; and the eastern or outer bailey, to which access was thus gained, contained within it the chapel, the mill, and the barracks and stabling. The smaller or inner ward had also a strong wall and deep moat, and in it was situated the keep, built massively on a lofty artificial mound. It was from this side that attack was always most imminent, and hence the centre tower of the keep was raised high enough to command an extensive view, and, if we understand Leland's words correctly, was strengthened at the base by no less than ten turrets."

Longtown has still a grey keep-tower, standing in a wild spot backed by the Black mountains, and Mr. Bodley's authority is quoted by Mr. Robinson as to its having been erected prior to the Conquest, and there can be but little doubt that the site had been entrenched as a camp even by the Romans.

Pembridge, fortunately, is in a comparatively perfect condition, and a monograph upon it by the late Mr. Wakeman is in the "Cambrian Journal." It is quadrangular, about 45 yards by 35 yards, with a south entrance, guarded by towers of unequal size. The courtyard is entered through a passage 33ft. long. The keep and kitchen exist, and the great hall and a projecting square staircase turret are now occupied as a farmhouse. Some of the details are very curious, and the structure is well worth careful examination.

Of Snodhill Castle, which dates from the latter part of the twelfth century, some transitional Norman portions of the keep remain, and an Edwardian gateway.

The ruins of Wigmore Castle, which belonged to the famed Mortimer family, cover a large area. It has a Norman square keep, and an entrance gateway on the south, of which, as well as of the walls and their defensive towers, there are large portions remaining.

Of the other examples in the list given, but fragments, or often only the mounds upon which they stood, remain, so that, with the notable exception of Goodrich, Herefordshire can boast of little but the memory of its several strongholds, and we fear it is the antiquary, the lover of the picturesque, and the artist, who would profit far more than the architectural student by the investigation of what is left of them.

◆

WHAT HOLLAND IS DOING FOR HER WORKMEN.

THERE are admirable technical schools established in Italy, Austria, France, the German States, Belgium, Switzerland, and Holland. The last-named country presents special features of interest, for the reason that its endeavours in a manufacturing direction are of comparatively recent date, say within the last quarter of a century, and that its working classes were said to dispute with those of England the bad pre-eminence of being the worst educated in Western Europe. Their gas-works were executed by English companies, who not only took over their own engineers, but likewise all overlookers and fitters, and their railways were laid by English engineers, who took over their own workmen. After 1839 a change in the national feeling took place (which is by some attributed to rivalry of Belgium), and capital, which our Dutch cousins had previously kept invested in foreign funds, was withdrawn to set up manufacturing and industrial companies. But the capitalists found themselves in a difficulty, for want of intelligent workmen, and were driven to bring home a number of Germans. The Dutch workman was utterly unfitted for competition with these intruders, and the national apathy, combined with a great jealousy of state interference, and a fallacy which prevailed without being publicly avowed among the more influential classes, that the more ignorant the people are the easier they might be governed—all these things combined (some of them are remarkably like England !) prevented improvement for some years. The social earthquake of 1848, however, woke up Holland as well as other countries ; new men came into power, and among other things new educational laws were passed, although the friends of ignorance made violent opposition. At present, the secondary (or technical) instruction is regulated by the law of 1863.

The schools consist of (*a*) Burgher day or evening schools, intended for the working classes. These are mostly held in the evening, the boys being apprenticed as soon as they leave the primary school. The course of study, as regulated by law, is mathematics ; rudiments of theoretical and practical mechanics and machinery ; natural philosophy and chemistry ; natural history ; technology or agricultural science, according to the locality of the school ; geography ; history ; the Dutch language ; political economy ; ordinary and rectilinear drawing ; gymnastics ; to which the local authorities may add modelling, or the German, English, or French language. (*b*) Higher Burgher schools, for the education of masters, overlookers, the commercial classes, and, in short, all who are not intended for the army, navy, or one of the learned professions. The course of instruction in these schools, includes those of the previous class, and adds the subjects of mineralogy, geology, botany, and zoology, with more extensive studies of history and political economy, the rudiments of commerce and book-keeping. Besides these there are (*c*) the agricultural schools, in which the sciences relating to agriculture take a more prominent part, and (*d*) the Royal Polytechnic School at Delft, which fulfils the functions of an industrial university, giving the most advanced instruction attainable, and from which the Government architects, naval engineers, shipbuilders, mechanicians, and mining engineers are chosen.

The law provides that there shall be one at least of the class of burgher schools whereever the population exceeds 10,000, and 15 Government schools at least—that is, schools where the town contributes only a part of the cost of the building—in different parts of the kingdom. The burgher schools are supported by the towns, the higher burgher schools by the towns with a subsidy from the Government. Then there are the Government schools ; and private schools may even, upon certain conditions, claim a subsidy from the Government. The amount of the Government payments to individual schools varies from £420 to £570 a-year, and one at Maestricht receives about £850 per annum. Compared with this support our system of prizes and scholarships, and grants to teachers at South Kensington, is paltry and mean. The schools had in 1867 about 2,200 students, which was in about the proportion of 1 to every 1600 of the population. Our own Science and Art Department schools in the same year were attended by 10,230 pupils, or about one in 2540 of our population ; so that not only are the schools better supported by the Government, but they are much more largely made use of by the people. The boys enter at the age of 12 or 13 ; at the burgher schools their stay is for two years ; at the higher schools they stay from three to five years, and may enter the Polytechnic school after passing the examinations of the schools, below, at 18 or 19 years of age. There is as yet but one girls' school—at Haarlem.

The above facts are fraught with the deepest lessons, and every one of our readers should lay them seriously to heart while foreign countries are thus bestirring themselves, and even the Dutch, whom it has been our insular habit to look down upon as apathetic and sluggish as their own marshy streams, are so steadily working their way in advance of us by polishing up the best tool in their chest—namely, the living intelligent workman. If we do not pay serious attention to it we shall realize the fate of the hare in his race with the tortoise, and be beaten at last. At the same time the example of that plodding little nation affords us great encouragement; with all their backwardness of years ago, they have made very great and solid progress, and so may we if we only learn the lesson they teach us.

These remarks receive additional point from the circumstance that in the Workmen's Exhibition at Islington the department assigned to the Royal Netherlands Commission holds very prominent and honourable position. Every branch of industry is well illustrated, and the government, with that push which characterises it, has appointed a royal commission to supervise all the arrangements, which is well represented in the building itself by Dr. Bikkers, who is always ready courteously to explain to visitors the peculiar features of the collection under his management. Our own attention was specially attracted by the exhibition of the results of practical technical instruction given in a school for the sons of workmen at Amsterdam. This school is supported by a society partly benevolent in its nature, but which pursues its object in a most practical and common-sense manner, deserving of the highest praise we can give it, which is to counsel such of our readers as have means and opportunity to "Go and do likewise."

The society for Promoting the Interests of the Working Classes at Amsterdam ("Maatschappij voor den Werkenden Stand") was established in the year 1854, and is now under the patronage of H.R.H. the Prince of Orange. It classifies its labours under five divisions—namely, 1st. the scavengers' brigade, which undertakes the sweeping and cleansing of the public roads and thoroughfares, the gutters included, and thus affords employment to many persons of the labouring class in a work which, in this country, is usually left to the municipal authorities. 2nd. The benevolent fund, for affording relief to workmen temporarily disabled by accidents occurring in the exercise of their trade. The workmen employed by contributors only have a claim upon this fund, but in many cases it has been applied to relieve the widows and orphans of workmen killed by accidents. 3rd. The industrial school for the sons of workmen. 4th. Lectures for the working classes. These were first established in the year 1866. During the last winter a course of fourteen popular lectures was delivered to persons of both sexes in the Frascati Buildings. The number of the audience varied from 600 to 1000. The subjects embraced by the lectures were physics, political economy, moral philosophy, pedagogy, history, literature, music, and the fine arts. In addition to these, a course of four lectures on natural philosophy was delivered exclusively to working men at the "Keizerskroon," the audiences numbering about 400. 5th. The needlewomen's employment division. The society established this branch of its labours in 1867, and has operated till the present time by giving instruction in the use of the sewing machine, and by providing these machines for indigent women, who are expected afterwards to pay for them by small weekly instalments.

In addition to the above, the society has, from time to time, undertaken the organization of exhibitions of objects made by workmen in their leisure hours, and has awarded medals, testimonials, or similar distinctions to those who have excelled at these competitions; it has offered its own medals to artisans, who have obtained prizes at other exhibitions as an additional home distinction; it has partly defrayed the expenses of working men visiting the Paris Exhibition of 1867; it supports workmen's unions, and has given rewards to workmen for honesty and fidelity during a continued service in the same employ.

The school for workmen's sons is, however, the most interesting of these various agencies, its results being now exhibited on the walls at Islington. It was established in the year 1861, and receives a subsidy from the city of Amsterdam. In the year 1866 his Majesty King William III. presented the school with a large and important collection of models, implements, and tools. New buildings were erected in 1867 at the Weteringschams, on which occasion there was a great manifestation of public sympathy in favour of the school, Prince Frederick and the Government of the province taking part in the proceedings. There are 125 pupils, of ages varying from thirteen to sixteen years, the sons of working men, and thirteen teachers. The course of study embraces — carpentering, forging, turning, embossing, carving; rectilinear, architectural, machine, ornamental, and hand drawing, &c.; knowledge of building materials, lessons in physics, algebra, mathematics, and mechanics. The lads are kept to study from 8 a.m. to 8 p.m., with an interval at noon, so that their mechanical skill is entirely the result of the instruction received. The exhibition is, in fact, an example of what might be done by lads of sixteen, if systematically instructed in their future trades, without being left to the casual instruction gained from jobs which happen to come up in the daily practice of the workshop. It consists of articles in most of the branches of instruction above enumerated. There is a large portfolio of drawings, architectural and shaded; illustrations of carpentry, proceeding from the simplest to the most complex combinations; and elevations and plans of buildings and details of work, which would not discredit any architect's office; then there are some cable chains made of wrought-iron, and various iron implements forged by the hands of the boys; several articles turned in oak, portions of sash frames, and dovetailed carpentry very neatly and creditably done; several carvings in bas-relief in oak; models of architectural details (full size) in clay; turned articles in polished wood; a small bookcase with carved open work; a model of a timber roof, very neatly made; a portion of a carved stair rail with dovetail joints; a riveted iron pail; a staircase made of deal (ordinary size) and many other articles, all showing very careful and systematic teaching and considerable manual aptitude on the part of such young boys. In fact, we should be inclined to place much of the work shown on a par with that of our average journeymen, although it must not be understood as coming up to best work. There is no pretence about the articles shown, everything is left unpolished and rough, so that all jointings, rivetings and weldings may be fairly inspected. The instruction given in this school could not, we think, be substituted for the experience to be gained in a workshop during apprenticeship, nor do we believe it is proposed to do so, but it forms an excellent preparation for workshop life; the youngster who goes into a workshop from such a school as this, with a systematic knowledge of the rudiments of his trade, together with the intellectual acquirements indicated by the drawings and writings here shown, will not be the hinderer, to be snubbed and treated as a "necessary evil," which an English apprentice too often is, but he will be a real help to the master workman; and will be able so to utilise his further experience, that he will turn out a finished workman, with whom, unless they take a leaf out of the book of his instructors, the artisans of England will find it difficult to maintain a competition.

FAILURE OF COMPETITIVE EXAMINATIONS.

THE competitive system of examinations has received its first blow, and one of a very serious character. It has not only failed most completely, but also in a branch or department in which one would not have expected a want of success to take place. Had this misfortune occurred in some of the minor departments of the State, to which admission is now only gained on competitive terms,—had it been impossible to obtain an adequate number of letter-carriers and postmen under similar circumstances,—the matter would have been of little or no importance. But that failure should be so glaringly manifest in a department of the Crown service so prominent as the Indian Public Works is an event as unexpected as surprising. When, out of seventy-six candidates, only thirteen are declared by the examiners to be eligible for forty vacant appointments, it cannot be concealed that the system adopted does not work. That for the present the Secretary of State for India has renounced the intention of adhering to the competitive principle, may be gathered from the following copy of the official document issued by his authority to intended future competitors :—

[Copy.]

India Office, 1870.

Sir,—In reply to your application for information regarding the examination of civil engineers for service in India, I am to inform you that it is not probable there will be any future examinations similar to those hitherto held for that purpose. No further copies of particulars regarding the Indian Engineering Service will, therefore, be at present issued from this office.—I am, Sir, your obedient servant, W. T. Thornton.

We have ourselves received so many applications for information on this point that we have no doubt the publication of the above notice will be valuable to a large body of our readers. It is not so very long ago since all appointments of this and a similar nature were obtainable only through private patronage, and that which was denied to merit and ability was readily granted to ignorance when backed by interest and party spirit. When public pressure became so strong that the authorities could no longer take shelter in their usual red-tapeism, the competitive system was conceded, and was universally anticipated to prove a complete remedy for the evils of the *ancien regime.* It is somewhat unfortunate that those who urged with vehemence and pertinacity upon the Government this very step should be themselves the ones to exhibit their incompetence to undergo the ordeal they petitioned for. What could be justly said now if the Indian authorities reverted to the old course of action? What if they were to say—"We gave you a fair trial, every opportunity and facility for entering the service, and you failed most miserably to reach the standard required of you—a standard, moreover, that you were acquainted with at least a year before you went up for the examination?"

Those who are aware of the mildness of the actual professional training, and the small expense the candidates are put to to enable them to compete at the examinations in question, will readily bear witness to the just and impartial conduct of the Indian Government. So many colleges and schools are recognised by the Secretary of State for India as possessing efficient classes for the instruction of the candidates, that one or other of them must be everywhere accessible. Again, the certificate of any professional man having a shadow of practice is regarded as valid for qualifying his pupil to present himself, and no very deep scrutiny is instituted into his moral or social antecedents. There are many who view in this very leniency the cause of the ill-success that attended the competitors in July last, and there is a good deal of sound sense in the opinion. Everything is valued in proportion to the difficulty experienced in obtaining it, and it is certainly probable that our young engineers imagined the race would be an easy one because the road was made smooth for them. Bearing in mind what a host of schools and colleges there are the principals of which would be all naturally anxious to have their establishments recognised by the Secretary of State for India, it was impossible for that official to do otherwise than acknowledge among the many some who no doubt did not possess resources and capabilities equal to the occasion. It is not every school that has an engineering or surveying class worthy of the name, or can impart any real professional knowledge even of the most elementary description. As with the collegiate and scholastic establishments so with the professional men. Without instituting invidious comparisons and distinctions, too nice a discrimination could not be instituted between the certificate of Mr. A. and that of Mr. B., especially at a time when so great a dearth of work exists in all professions, trades, and occupations that many practitioners of first-rate ability and repute are doing little or nothing. But if these matters required delicacy and tact on the part of the authorities to deal with and to decide upon, there was no such obligation or task entailed upon the candidates themselves. They had nothing to do with individual pretensions, nor the interest of principals and head-masters. They were at perfect liberty to select any establishment they preferred, as well as the engineer whose service they were desirous of entering. From the results of the last examination we are sadly afraid that some of them made a very bad selection indeed. Parents and guardians are not always infallible judges on these subjects, and the loss of a valuable and permanent appointment in consequence of a desire to save a fee is a sorry specimen of the truth of the old adage "penny-wise and pound-foolish." Viewed in a purely commercial light, a permanent appointment, with an increasing salary attached to it, is worth the expenditure of so much capital, but there are some who expect interest without any investment of capital.

So signal a failure having attended the competitive system in the Indian Public Works Department, it is not surprising that the authorities should contemplate its abandonment and the substitution of another. The rumour set afloat some time ago, that an Indian College was to be established in London for the especial training of young engineers for Indian service, is, we have received from private information, no longer a rumour, but a fact. Whether this will altogether render a year's probation with a *bona fide* professional man superfluous or not remains to be seen. We adhere to the opinion that, however valuable the scientific education may be, no college or school in the world can teach a young man that which he can learn only in the office of an architect or engineer. The routine of the office, which is indispensable to a professional man, cannot be transported into the atmosphere of a college The peculiar technical and professional training and knowledge by which a man gains his living cannot be grafted upon a professor or an usher, whose duties lie in a totally different sphere of action. It may be urged that the establishment of this college is for preparing young men, not for the profession at large, but for a special service, and that the system of education which might suit them for the former would not be the best to adopt for the latter. There is a good deal of truth in this, but it tells rather against the establishment itself. Supposing that there are forty vacancies to be filled up every year, which would hardly be the case after the first three or four years, but, nevertheless, while that number did exist the pupils or the candidates would muster in all probability about a hundred. Out of this hundred only forty could succeed. Assuming that all these forty were able to obtain the minimum number of marks necessary to qualify them for an appointment, what is to become of the other sixty? After the limiting age they cannot compete again, and must, therefore, leave the college where they have been trained for a special service. While there they will have made no connection, and will not have the same chance of obtaining employment they would have had they entered the profession in the ordinary manner. In fact, the leaving the college will tell very forcibly against their future prospects, as it will be at once evidence of their incompetency to obtain an appointment in the Public Works Department, and it will be argued by many of those to whom they may apply for work that they are not suitable men to engage. Under these circumstances they will have but one course to adopt—that is, to commence the profession *de novo*. If the present limit of age—twenty-four—be adhered to under the new *regime*, this will be an expensive and somewhat hazardous experiment to attempt. That the mathematical and general scientific education at the new college will be of the very highest order, and well calculated to form the foundation of future technical information, there is no room to doubt. But there are not wanting numerous other establishments of a similar character where an equally sound scientific education can be obtained. Certainly, if we are to judge from the results alone of the examination in July, some of these do not seem to be competent to impart to their "alumni" the particular description of scientific knowledge requisite to enable them to obtain an appointment in the Indian Public Works. But, as we have before remarked, it was quite in the power of the candidates to make a selection which would ensure them efficient instruction. At the same time, in the interest of fair play, the whole blame must not be laid upon the scholastic and collegiate institutions. It is quite certain that out of so large a number of candidates there were some whom no amount of "coaching" could have "put through."

There is just one more point to be considered before we take leave of this important subject. Pending the establishment of this new college, what is to be done in the meantime towards filling up the twenty-seven vacancies that now exist in the Public Works Department? We may just hint that, in all probability, a supplemental examination will be held some few months hence, in order to afford a second chance to the previous unsuccessful candidates, and to others who may be desirous of competing for the appointments. Due notice of any such intended proceeding on the part of the India Board will be given in the usual manner, and those who may contemplate a second or first attempt will do well to "put themselves into training at once." It is impossible to avoid perceiving to what a prominence these Indian appointments have attained when they are considered deserving of the establishment of a special school of education for the intended candidates. Although not exactly everything that they might be in matters of pay and pension, yet ameliorations and changes are under the consideration of the Home Department which will go far to place the whole service on a better footing hereafter.

◆

SCULPTURES NOW IN THE LATERAN MUSEUM AT ROME, FROM THE TOMBS OF SUPPOSED ARCHITECTS; THE ATERII FAMILY.

WE have selected two of the photographs from Mr. Parker's series of the antiquities of Rome, which appear to us of special interest to the architectural profession. They are from the celebrated tomb of the Aterii, discovered in 1849 at Cento Celli, a district a few miles from Rome, full of tombs (from the hundred cells of which it is supposed to have been named). It was evidently a great burial-place in the time of the Emperors Trajan and Hadrian, and it is believed that Hadrian had one of his magnificent villas there also, as there is an aqueduct leading to it. These two photographs, of which we present lithographs, represent two interesting panels of sculpture of the first century of the Christian era, or beginning of the second; they are now preserved in the Lateran Museum. The first (No. 1,500 in Mr. Parker's catalogue) is extremely curious, as showing the manner in which the Romans in the time of the Empire, and probably during the earlier period also, raised their great blocks of stone, and placed them on the walls, without scaffolding. The sculpture represents a rich tomb, or a temple, of the first century, nearly finished but not quite, with the machine in question at the end of it in front of the portico, and two men placing a great stone on the summit; it is level with the top of a palm-tree, which is represented to show the height. The men are at the upper end of a machine very similar to a modern fire-escape. The stone is attached to the end of it when it is on the ground; it is then raised by means of a tread-wheel, in the place of the ordinary wheel. Inside of this tread-wheel five men are represented (and there may have been more, for the panel is broken off in the middle of the wheel). By their weight they lift up the ladder, with the stone at the end of it, until it is nearly vertical; it is attached to and guided by strong cords; each of the men stands on a sort of large pulley with one foot, and the other foot rests upon the cord. They hold the stone in their hands, which seems to be part of the cornice, about 2ft. or 3ft. wide and the same length. The tread-wheel does not rest upon the ground, but on blocks which are movable, and 5ft. or 6ft. high, as two men are represented under it, and the whole appears as being pushed up a flight of stone steps in front of the portico. Under this also is what seems to be intended for the plan of the inside of the tread-wheel. It seems not improbable that the whole design is imaginary, and it may represent the tomb of an architect. On this one panel there seem to be several designs represented—one, a temple, with a portico; another, a tomb, with a doorway; another, perhaps a *janus quadrifrons*, or small temple with four faces, and a cupola at the top with a figure under it, and other figures sculptured on both sides.

The other panel (No. 1,501) is equally interesting in its way, but more to scholars and those who study the antiquities of Rome than to the professional architect. It represents five buildings: the first, beginning with the left hand, is a triumphal arch, with the inscription ARCVS AD ISIS; the fourth in order is another triumphal arch, with the inscription on the cornice, ARCUS IN SACRA VIA SVMMA. In each case the figure of a warrior is represented under the arch, and other figures on the piers by the side, between the columns. Number two of this series is a portion of a large circular building of three storeys, which is looked down upon, as the top is shown. The lower arches are open, the others have sculpture in them. Next to this, in number three of the series, is another triumphal arch, seen end ways, with a figure under the arch, and a group of horsemen on the top of it. The fifth and last of the series is the portico of a temple of six columns, with a pediment and an attic, and again the figure of a god between the two central columns, as often represented on coins and medals. The portico stands on a lower level than the triumphal arch next to it. May we venture to conjecture that these five buildings are intended to represent a view of the Summa Via Sacra, or Upper Via Sacra, on which the Arch of Titus now stands (although it is singular that none of them correspond with that arch), and, therefore, that these stood to the south of that arch, in front of the Cliff of the Palatine; and that numbers two and three are intended for a distant view of the Colosseum, and of a triumphal arch that stood by the side of it, on the same site on which the Arch of Constantine now stands? It is well-known that in the time of Constantine old materials were used for building this arch, supposed to have been taken from the Arch of Trajan, on the entrance to his Thermæ. That opinion, we believe, rests upon tradition only, and the arch pulled down in the time of Constantine may have stood on the same site as the present arch. Another conjecture is that the sculptured panel also may be part of the tomb of an architect of the time of Hadrian, and may represent the buildings he had executed or had been employed upon.

In any case, these two pieces of sculpture are extremely interesting, and the profession are much indebted to Mr. Parker for making them known in England. We cannot but say that sufficient attention was not paid to these photographs by the profession when they were exhibited, and that the Royal Institute of Architects ought to have a set of them.

◆

THE PARISH CHURCH OF LLANBADARN-FAWR, NEAR ABERYSTWITH, FORMERLY THE CATHEDRAL OF THE ANCIENT SEE OF LLANBADARN-FAWR.

WHAT is known as to the ancient history of this interesting fabric has been succinctly described in the following remarks, which we quote from the appeal made to the public for aid to the fund for its restoration. "The earliest notice of this church in history is the arrival of S. Paturnus in A.D. 524.—(Padarn ap Petrwn ap Emyr Llydaw, Cefnderw i Gadvan,—'Bonedd y Saint,' Myf. Arch., Vol. II., p. 50.) He is said to have come over from Armorica, together with S. Cadvan, at the head of 847 monks.—('Lives of Cambro-British Saints,'* p. 189) According to 'Achau y Saint,' he became a member of the College of Illtyd. He afterwards established a college of 120 members at Llanbadarn-Fawr. Being abbot of the new institution, he appointed over it also a steward, a provost, and a dean. At the same place he founded an episcopal see, and was himself the first bishop. This office he held for 21 years, after which he returned to Armorica and became Bishop of Vannes. He is said to have built monasteries and churches throughout the region of Ceredigion.

"The southern boundary of the Diocese of Llanbadarn is supposed (*vide* Rees's 'British Saints,' p. 216) to be indicated in the present day by churches bearing the name of the saint. The line would thus start on the coast below Llanddewi-Aberarth, and crossing the Teifi at Llanddewi-brefi, would go up to Builth in Breconshire. On the southern side of this boundary we find numerous churches dedicated to S. David; and facing them on the northern side another series bearing the name of S. Paturnus or some of his companions. Churches dedicated to S. Padarn in the centre and north of Radnorshire carry the boundary of his diocese round the whole of that county, with the exception of the Deanery of Elvael, which is on the southern side. Numerous dedications to companions of S. Paturnus through Montgomeryshire, and the south of Merionethshire, create a slight probability that the southern portion of both these counties may have been subject to S. Paturnus's jurisdiction.

"The great church of Cardiganshire, Llanbadarn-Fawr, forming its central point, the limits of the see probably fluctuated with those of the principality of Ceredigion, whilst there is reason to believe that the district of Ceredigion extended at one time north of the Dyfi, so as to take in a part of Gwynedd, properly so called. ('Vestiges of the Gael in Gwynedd,' † p. 44) How long Llanbadarn continued to be a bishopric cannot be ascertained. The last notice of it under that character in the Welsh Chronicles is in the year 720, when it is recorded (Brut y Tywysogion, Myf. Arch., Vol. II., p. 472) that many of the churches of Llandaf, Mynyw, Llanbadarn, meaning the three dioceses of South Wales, were ravaged by the Saxons. The church of Llanbadarn-Fawr, after the cessation of the episcopate, retained something of a cœnobitic or collegiate character, to, at least the beginning, or more probably the middle, of the thirteenth century, in spite of an attempt at the commencement of the twelfth century to appropriate its revenues to the Abbey of S. Peter, Gloucester. We find Geofrey de Henelawe, Bishop of S. David's from 1203 to 1214, instituting a Rector of Llanbadarn without respect to the rights of the canons, 'an unexampled act,' says Giraldus Cambrensis, 'on the part of a bishop of S. David's.' ('Hist. and Ant. of S. David's,' p. 175.‡) Llanbadarn was finally appropriated in 1360 to Vale Royal (*vide* Lib. Stat. Eccl. Menev.)."

The following is an extract from the report of the architect to the committee formed for the restoration of the church, and describes its condition before the works recently done to it were commenced:—

"This stately and venerable fabric, once the cathedral of the ancient See of Llanbadarn-Fawr, is a cruciform church, consisting of aisleless nave, transepts and chancel, with a massive tower over the intersection. The style of its architecture is that of the early part of the thirteenth century, but the structure has evidently been nearly rebuilt at a subsequent date, after extensive injuries suffered from fire or through violence; the same design was, however, adhered to, and many of the older details preserved and re-used.

"The difficulty of ascertaining the original character of the church under such circumstances is rendered less by a comparison with other contemporary buildings in the principality, such as the Priory and Christchurch at Brecon, Ewenny Abbey, &c. All these exhibit these same general characteristics, extreme simplicity in the external features, combined with an admirable degree of finish in the masonry, and a comparative refinement and richness of detail in the interior. Llanbadarn Church, though one of the simplest, yields to none of these in point of the execution of those details that are evidently original, while it is surpassed by few in dignity of scale and proportion; its beautiful southern doorway, however, alone remains to show what the internal features may have been, which are now replaced by work of an entirely different and ruder class, as, for instance, the arches supporting the tower.

"The windows, though but simple lancet-shaped openings with chamfered edges, have dressings of the best description; and at the angles of both transepts are still remaining a few stones that show that the first building had a projecting moulding above the base and quoins of a corresponding character.

"The tower, which is evidently of a later date, as it has many older worked stones built into it, has, unfortunately, none of the usual weatherings to show the original pitch of the roofs; the present roofs, of indifferent character, are comparatively modern and much too low; the only clue to the former condition of these is, therefore, by reference to other existing examples.

"The church has fallen into a sad state of dilapidation from neglect and injudicious repairs. The nave roof, and the spire, in particular, are in an imminently dangerous condition from the decay of their principal timbers, and the side walls are tottering, from their outward thrust; in some parts they overhang the base 15in., and in others they are rent from top to bottom."

The view which we present to our subscribers in our present number is a reduction, by the photo-lithographic process, from a drawing made by Mr. Howard Gaye for the architect, and shows the building in the condition to which it is hoped before long it will be brought. The works which have as yet been executed are the restoration of the nave and rebuilding of the porch. The nave, as described in the architect's report, was in a most ruinous condition; yet as every stone of so ancient and interesting a building deserves to be preserved intact if possible, the first rumour of the intention to rebuild it provoked the jealous intervention of several eminent antiquaries, who knew and loved the old fabric. Notably among these was the late esteemed Mr. J. L. Petit and the Archdeacon of York. These gentlemen, however, upon the evidence laid before them, conceded the necessity of the proposed works, and as the committee entrusted the execution of them to a builder of great experience in such matters (Mr. Thomas Williams), in whom the architect reposed great confidence, all parties, though regretting the need, felt satisfied that it would be carried out in the proper spirit of conservatism. Accordingly, as much of the old walling of the nave as it was practicable to retain has been retained, and the rest rebuilt in exact conformity with the original design. During the works, most curious fragments of successive polychromatic and pictorial decorations were discovered upon different coats of whitewash, some evidently dating from the period of the erection of the church. Under the circumstances it proved impossible to preserve any of these, but Mr. Seddon has recorded them in a paper recently read by him at the Institute of Architects, and published in the transactions of that body. He also had a careful drawing made of the principal figure—a colossal S. Christopher—by the able hand of Mr. E. S. Cole, the architectural artist.

The porch had no antiquarian or architectural interest whatever, and its scale being mean in comparison with that of the church, it has been taken down and a new one erected instead, of a commensurate size and corresponding simplicity of detail to that of the church, from the design of the architect.

Our view also shows the spire which it is proposed to substitute for the present small and decayed one, and in the foreground are two ancient Celtic crosses, which are still preserved in the churchyard. The extreme beauty of the churchyard, with its grand old trees, probably coeval with the structure itself, is not the least of the attractions which Llanbadarn-Fawr holds out for the visitors to Aberystwith, for whose benefit during the season the vicar holds an English service on Sunday evenings. As efforts are about to be made to further the restoration so happily commenced, we would call attention to the fact, and express a hope that they may be liberally responded to.

◆

TRANSPORTATION OF EARTH.*

IN all constructions which require the movement of large quantities of earth, such as the establishment of a road, railroad, or canal, two questions have to be solved: one consisting of the determination of the mean distance of transport of earth, the other of the most advantageous *organization* of this transport. We shall first consider the former.

If V is the total volume necessary for a given cutting, the cost of transport is proportional to V; but it will also depend upon the distances to which the different portions of the volume V must be transported. Let v, v', v'', &c., represent the several elements of the volume V; d, d', d'', &c., the distances corresponding to these elements; then the expense of transport will be proportional to the quantity—

$$vd + v'd' + v''d'' +, \&c.,$$

Let D be such a distance that

$$vd + v'd' + v''d'' +, \text{etc.}, = VD; \; [1]$$

then D will be the mean distance of transport, and the expense will be proportional to the product V D. The determination of this mean distance is important.

The most simple and ordinary case is that in which the carriage is along a straight line. In this case the mean distance is the distance between the centres of gravity of the cutting and the filling. Let $\chi^0, \chi', \chi,''$.. ...X_0 be the primitive distances of the centres of gravity of the elementary volumes v, v', v'', and of the total volume to any fixed plane perpendicular to the axis of the route; and let χ', χ'', χ'''......X be the distances of the same centres to the same plane after transport. Then $d = \chi - \chi_0$; $d' = \chi' - \chi_0'$; $d'' = \chi'' - \chi_0''$;......therefore, equation [1] may be written:

$$v\,(\chi - \chi_0) + v'\,(\chi' - \chi_0') + v'' - (\chi'' - \chi_0'') + \ldots\,.. = V\,D;$$

or,

$$[v\chi + v'\chi' + v''\,\chi'' + \ldots] - [v\chi_0 + v'\,\chi_0' + v''\,\chi_0'' + \ldots] = V\,D.$$

Applying the principle of moments,

$$V\,X - V\,X_0 = V\,D$$

$$\therefore D = X - X_0;$$

which proves the above principle.

In applying this rule, engineers generally employ a graphic method. Let X X' (Fig. 1) be the axis of the route; and A, B, C, points at which the cross-sections have been determined. Suppose that the first profile, A, presents a section of cutting, d, and a section of filling, r; the second profile, B, corresponding sections, d and r; the third,

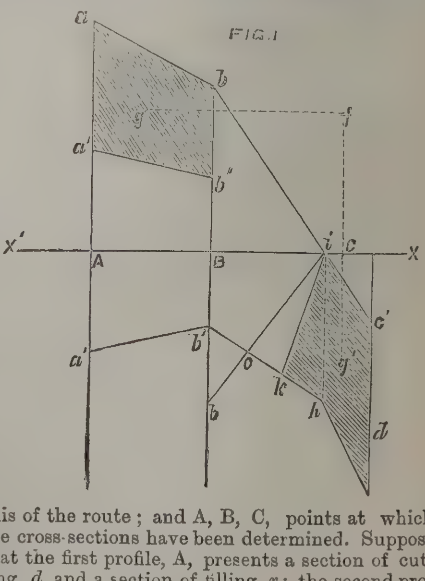


FIG. 1

---

* Published by the Welsh MSS. Society.

† By the Rev. W. Basil Jones, now Archdeacon of York.

‡ By the Rev. W. Basil Jones and Edward Augustus Freeman, Esq.

* Translated from Sonnet's 'Dictionnaire des Mathématiques Appliquées.'

C, a filling without cutting. If, through the point of change from cutting and filling in the profile B a verticle plane is supposed to be parallel to the axis of the route, it will divide the filling of the profile C into two parts; one, ρ, corresponding to the cutting d', the other, ρ', to the filling r'. Perpendiculars are drawn to X X′ at A, B, and C; A a, B b are laid off proportional to the areas of the cuttings d and d'; and A a', B b', C c', D d', proportional to the fillings r, r', ρ, ρ'. Connect by straight lines $a\ b$, $a'\ b'$, $b'\ d$, and $b\ c'$. The volume of the cutting between A and B is approximately

$$\tfrac{1}{2}\ (d + d')\ \mathrm{AB},$$

and is represented by the area of the trapezoid A a b B. The volume of filling between the same sections is represented by A a' b' B. Between the sections B and C we must first consider the volume of filling corresponding to the fillings r' and ρ'; it is represented in the drawing by the drawing by the trapezoid B b' d C; we must next consider an area corresponding to the cutting d' and the filling ρ. The distance x of the mean line of passage to the section B, being expressed by

$$x = \mathrm{B\,C}.\ \frac{d'}{a' + \rho} \text{ or } \mathrm{B\,C}.\ \frac{\mathrm{B}\,b}{\mathrm{B}\,b + \mathrm{C}\,c'}$$

must be equal to B i. Consequently the volume of the portion in cutting, being expressed by

$$\tfrac{1}{2}\ d'\ x \text{ or } \tfrac{1}{2}\ \mathrm{B}b.\ \mathrm{B}i,$$

is represented by the area of the triangle b B i. The volume of filling is represented by the area of the triangle i C c'.

Between two consecutive sections there is a partial compensation between cutting and filling consequent upon the carriage of earth perpendicular to the axis of the route, thus requiring no longitudinal transport. By laying off the trapezoid A a' b' B upon A a'' b'' B, it is seen that after the partial compensation just mentioned there will remain an excess of cutting corresponding to $a\ a''$ $b\ b''$. To obtain more conveniently the total filling between B and C, which is the sum of B b' d C and i C c', draw $i\ h$ perpendicular to X X′; make $d\,e$ = C c', and join $e\ h$; the triangle $d\ e\ h$ is equivalent to the triangle i C c', so that the total filling is shown by the polygon B C $e\ h\ b'$. Revolve the triangle b B i to b, B i, and put for the $b'\ o\ b$, the equivalent triangle $i\ o\ k$. The figure B b' k i is equal to b, B i, and the excess of the filling between B and C will therefore be represented by the figure $i\ h\ k\ e$ C. The centres of gravity g' and g of $a\ a''\ b''\ b$ and $i\ k\ h\ e$ C are found. We draw $g\ f$ parallel to X X′ and $g'\ f$ perpendicular. The distance $g\ f$ is the mean distance of transport.

This method is applicable, whatever the number of profiles, by carrying from one interval to the next the excess of cutting obtained by the partial compensation made in each interval. This expeditious process gives results sufficiently approximate, especially if the drawing is made to a large scale. The centres of gravity can often be determined by inspection without great error. It is not necessary to use the same scale for distances in the direction X X′ and for the distances set off perpendicular to this axis. Ordinarily the last are taken to the scale 0m.005 per square metre; the first are taken to the scale 0m.001, 0m 002 to the metre; sometimes to a smaller scale.

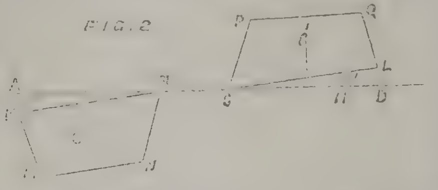
There is another case in which the mean distance of transport can be evaluated very easily; that in which the cutting or filling can be divided by vertical planes into equal corresponding slices. This happens in most of the terracing work in fortification. The relief of fortified works is formed by the earth brought forward from the ditch, so that a series of vertical planes perpendicular to the direction of the *line de feu* divide the fosse and the relief into sections of the same volume. In this case the distance between the centres of gravity of cutting and filling is the same for each section; it is equal to the distance between the centres of gravity of the force and of the total relief; and this is the mean distance of transport.

In other cases this mean distance can be determined only approximately, and its minimum can be found only by *tatonnement*. In general, engineers take approximate value of the mean distance, the distance between the centres of gravity of cutting and of filling.

We have supposed the direction of transport to be horizontal. When in going from cutting to filling it is necessary to go up a rising grade, this circumstance of course increases the work. In military engineering it is assumed that 20 metres of distance on a rising grade of 1-12th is equivalent to 30 metres on a horizontal; and the cost of transport is determined by this rule. Suppose b to be the horizontal projection of the distance to be passed over and h the height, the grade being 1 in 12, we have $b = 12h$; and the distance $12h$ on the rise is equal to $18h$ on the horizontal.

Let A M N B (Fig. 2) represent the section of an excavation from which earth is to be carried to fill the section C P Q D. Through the points B and C draw the lines B K and C L at an incline of 1 to 12; that is, at a horizontal angle of about 4° 46′. Let g be the centre of gravity of the triangle A K B, g' that of the triangle C L D, G that of the quadrilateral L M N B, G′ that of the quadrilateral C P Q L; h, h', H, H′ the distances of the several centres from the horizontal A B C D; let fall upon this horizontal the perpendiculars g I and g' H. Consider the volumes corresponding to the same length of excavation and embankment perpendicular to the plane of the figure. Earth must be brought to the point B, carried from B to C, and spread over the entire surface of the embankment. It may be assumed that the work is the same as if the volumes were concentrated at their centres of gravity. According to this supposition, in order to bring the earth from the prism A K B to B, a volume v must be moved a distance compounded of I B, horizontal distances, and $6h$, taking rise into account. The product of the volume by the distance is

FIG. 2



$$v\ (\mathrm{IB} + 6h)$$

while the corresponding product for carriage from B to C is

$$v.\ \mathrm{B\,C}.$$

For transport from the point C to the several points of the prism C L D of volume v', we shall have

$$v'\ (\mathrm{CH} + 6h').$$

Let V represent the volume of the prism K M N B, and V′ that of the prism C P Q L; then the product for transport to the point B is

$$\mathrm{V}.\ 18\mathrm{H};$$

from B to C the product is

$$\mathrm{V.BC}$$

finally, for transport from C to all points of the prism C P Q L, the product is

$$\mathrm{V}'.18\mathrm{H}'.$$

In order not to pass the inclination 1 in 12, the line of distribution of the volumes V and V′ must be extended by making them follow the slopes made upon the interior talus of the excavation and upon the talus. These slopes are divided into lengths of 20 metres, so that each receives 10 metres of distribution from either end. The centre of gravity of the volume received or distributed is then 5 metres from the slope. Hence 5 metres must be added to the distance of transport of each of the volumes V and V′; so that the total sum of products of volumes and distances is

$$\left.\begin{array}{l} v\ (\mathrm{IB} + 6h + \mathrm{BC}) + v'\ (\mathrm{CH} + 6h') \\ + \mathrm{V}\,(18\mathrm{H} + \mathrm{BC} + 5\mathrm{m.}) + \mathrm{V}'\,(18\mathrm{H}' + 5\mathrm{m.}) \end{array}\right\} \ldots[2]$$

This sum, divided by the total volume $v' + \mathrm{V}'$, will give the mean distance of transport.

The first two terms of formula [2] can generally be neglected in comparison with the other two, unless either the excavation or the embankment is broad and shallow. When these terms can be neglected, we have $\mathrm{V} = \mathrm{V}'$, and the formula reduces to

$$\mathrm{V}\ [18\ (\mathrm{H} + \mathrm{H}') + \mathrm{BC} + 10\mathrm{m.}];$$

the mean distance of transport in this case is

$$18\ (\mathrm{H} + \mathrm{H}') + \mathrm{BC} + 10\mathrm{m.}, \qquad [3]$$

that is, it is 18 times the difference of levels of the centres of gravity of the cutting and the filling, increased by the distance from the edge of the cutting to the foot of the filling, increased by 10 metres.

If the ground rise from B to C, H being the difference of level of the points G and B, H′ that of the points G′ and C, z that of the points B and C, we have for mean distance of transport

$$18\ \mathrm{H} + \mathrm{BC} + 6z + 18\ \mathrm{H}' + 10\mathrm{m.},$$

or

$$18\ (\mathrm{H} + \mathrm{H}') + \mathrm{BC} + 6z + 10\mathrm{m.},$$

which amounts to adding, according to the rule given above, 6 times the difference of level of the points B and C.

On the other hand, if the ground descend from B to C, we should apply formula [3] without taking this circumstance into account, unless the point G′ does not descend a level equal to or less than that of B, in which case it is only necessary to add 18H + 10m., the horizontal distance from the points B and G′. No account is taken of the descending slopes.

When the earth has to be removed only 2 and 4 metres in a horizontal direction, or from 1·6 to 2 metres in a vertical direction, the transport should be made with the shovel. For greater distances the wheelbarrow is used, and the carriage is done by relays; the quantity of earth is said to be *a un seul homme*, if a single labourer can load a barrow while another runs over a relay of 30 metres, going and returning. The quantity of earth is said to be *a un homme et demi* if it is necessary to have two loaders to one digger to feed two barrows running over the same relay. The earth can be *a deux hommes* or *a trois hommes*. In general, if T denotes the time occupied by a pickman to dig a certain volume of earth, and t the time for a loader to load the same volume upon a barrow, the ratio $\frac{\mathrm{T}}{t}$ expresses the number of pickers necessary that a loader may work without interruption. The number necessary to supply a wheeler is

$$\frac{\mathrm{T}}{t} + 1 \text{ or } \frac{\mathrm{T} + t}{t}$$

and the quantity of earth is said to be to

$$\frac{\mathrm{T} + t}{t}\ \text{men.}$$

As to the length of the relay, it is determined by the following considerations: It is assumed that a wheeler can run 30,000 metres in a day of 10 hours, and that a loader can load 20 cubic metres in the same time. The ordinary capacity of a barrow is 0m.04; *i.e.*, 25 barrows to the cubic metre. If x denotes the distance run by the wheeler while the loader fills a barrow, we have

$$20 : 0{\cdot}04 :: 30000\mathrm{m.} : x$$
$$x = 60\mathrm{m.}$$

The half of this distance, 30 metres, is the length of the relay. This is about the same in all localities, while the capacity of the barrow varies, according to the country, from 1 33rd to 1-20th of a cubic metre. It is desirable to know the time necessary to transport a cubic metre the distance of a relay. As the wheeler runs 3,000 metres an hour, he wheels a double relay of 60 metres in 0h 02; but in this time he carries 1-25th of a cubic metre; to carry a cubic metre a distance of 30 metres, he will require a time

$$0\mathrm{h}.02 \times 25 \text{ or } 0\mathrm{h}.50.$$

For longer distances the hand-truck (*camion*), dumping cart (*tombereau*), or waggon (*wagon de terrassement*) is used. The hand-truck has a capacity of 20 cubic metres, and is usually drawn by men. The relays are about 100 metres, or it requires 20 minutes to carry a cubic metre over this distance The capacity of the dumping cart varies from 0·50 to 1·50 cubic metres; it is drawn by one or by two horses. About 20 minutes are employed in moving a cubic metre over a distance of 100 metres, by means of a cart of mean capacity, loading and unloading included.

For longer distances, waggons (or carts) are employed, drawn by horses or a locomotive, and the transport is not made in relays. At Clamart, on the Versailles Railway, the waggons had a capacity of 1 50 metres. Three horses dragged 10 of these, with a velocity of 25,000 metres, in 10 hours. A locomotive dragged 20 with four times this velocity. In each case there was a loss of 10 minutes each trip for loading and unloading. The road had an inclination of 0m.004 to the metre. On a horizontal road five horses instead of three would have been necessary. The barrow or the truck is generally employed for distances of less than 100 metres; the dumping-cart for distances from 100 to 500 metres; waggons drawn by horses, from 500 to 2,000 metres, and for greater distances, cars drawn by a locomotive. In mountainous countries the earth is often carried on the back of a labourer or a mule; in the first case panniers are used, of a capacity of about 0m.01; in the latter case each pannier has a capacity of about 0m.04.

When earth has to be moved in a vertical direction, the shovel should be employed, if possible, for heights not exceeding 1m.65. The labourers, one above the other, at this interval, can raise, in 10 hours, 15 cubic metres to a height of about 5 metres. Another method, almost as good, is carriage by the basket, by aid of a ladder. A labourer can make 27 trips of 3 metres height in an hour, carrying in all 8·10 cubic metres a distance of 3 metres—a result nearly equivalent to the former; for, multiplying the volume by the height, we have, in the first case, 72·9; in the second, 75.

Sometimes panniers, called *bourriquets*, are raised by a drum. The capacity of one of these is 0·033 cubic metres. The drum is from 15 to 20 centimetres in diameter, and from 1m. to 1m.2 in length. The crank is 0m.4 long. The rope which carries the panniers is 0 03m. in diameter. By means of this apparatus, 15 cubic metres can be raised to a height of 5 metres. A similar method is employed in tunnelling work.

◆

ANOTHER THEATRE FOR LONDON.

Many of our readers will doubtless remember the mania which prevailed a few years ago for the erection of gigantic hotels by limited liability companies. Many of those projects were most disastrous to the unfortunate shareholders, and it is to be hoped, for the sake of those concerned, that the present rage for theatre-building in London will not be attended with the like misfortune. By a curious coincidence, the walls which were to enclose a large hotel now include within their limits two theatres. The mere half-finished brick carcase intended for the Strand Hotel stood idle and ruin like for several years between Holywell and Wych streets. After a time, the ground floors were utilised as shops, and let to booksellers and others, and last year about half of the internal area of this huge carcase was appropriated as the site of the Globe Theatre. On the remaining half of the interior of this block another theatre has now been for some months in course of erection, and it will probably open at the end of September or beginning of October. This new theatre will, we understand, be devoted to burlesque, extravaganza, and *opera bouffe*, end will be totally distinct from the Globe Theatre, and under different management. The backs of the stages of the two theatres abut on each other, and are divided by a solid brick party wall. The stage of the new theatre (which has not yet been given a name) is 32ft. deep. The whole of the space which in former days would have been called the pit is appropriated to stalls. This space, or pit area, is however, very limited, as there is no headway under the first tier or balcony, which is to be named the stall tier, and which rises up solid from the ground, the top of the balcony or box-front being only 6ft. or 7ft. from the floor of the pit or stalls, so that a person in the pit (otherwise stalls) could easily shake hands with one in the first or stall tier. Above the stall tier, at a good elevation, is the grand tier or dress circle; and above this, again, is the final tier, appropriated to "amphitheatre" and "amphitheatre stalls." It is estimated that 1,600 persons may be comfortably seated in the auditorium. This new theatre will have an advantage over the Globe, inasmuch as it will have its principal entrance in the Strand, nearly opposite Surry-street. This is effected by means of a subway which passess from the new theatre, beneath Holywell-street, to the basement of a new building in the Strand. This basement will be luxuriously fitted up and decorated to serve as a crush-room, and will be approached by a broad flight of steps, leading from the vestibule. We understand that in constructing the subway from the theatre to the Strand the workmen came upon traces of the Old Holy Well, from which Holywell-street derives its name. Besides this principal entrance in the Strand, there will be other entrances from Wych-street and Holywell-street. The decorations will consist principally of carton-pierre work, with the ceiling and the space over the proscenium painted with allegorical subjects. The whole of the decoration is under the direction of Mr. Bradwell. The gaslighting will be effected by means of a sun-burner. From the peculiar shape of the house (that of a flat horse-shoe). a good view of the whole or nearly the whole of the stage will be obtainable from every seat. Special precautions have been taken to secure efficient ventilation, and the carrying off of the products of gas combustion. Mr. F. H. Fowler, of Fleet-street, is the architect, and Mr. Read the builder.

◆

SANITARY WORK IN MARYLEBONE FOR 1869.

Dr. WHITMORE'S sanitary reports are always valuable, not only as records of good work done, but for the practical suggestions for further improvement frequently embodied in them. In the report for 1869, now before us, the table shows that 2,361 houses were visited during the year, and of these 1,262 underwent sanitary improvement. The length of new pipe drain laid down to supply the place of old and defective brick drains was 8,014ft. Water was laid on to 447 closets; 1,481 yards and areas were cleansed and limewashed, and many of them repaved, and a great deal of other work of a like nature was completed. Besides all this, the bakehouses, slaughter-houses, and cow-houses in the parish were periodically visited, and the necessary sanitary measures enforced. Manure heaps were removed, roofs repaired, and food unfit for human consumption destroyed in large quantities. The quantity of unsound fish alone destroyed amounted to 3,599lbs. The great difficulty in the way of sanitary improvement is undoubtedly, as Dr. Whitmore asserts, the want of proper house accommodation for our labouring poor. In this respect matters are year by year getting worse; the poor are increasing, but there is no corresponding increase in the class of houses appropriate to their means; on the contrary, everything in the shape of local improvements, and indeed of metropolitan improvements, tends to diminish their number. But with all these improvements, with all our great undertakings for the adornment of the metropolis, we have done absolutely little or nothing for the improvement of the houses of those who construct our Embankments and make our streets. "Until this be done" says Dr. Whitmore, "we shall have but small cause indeed for pride or satisfaction in the architectural beauty, and still less in the healthfulness of London."

◆

ANCIENT SEPULCHRAL MONUMENTS IN BANGOR CATHEDRAL.

Mr. M. H. BLOXAM, F.S.A., writing to the *North Wales Chronicle* on the 17th inst., says:—

There are but few ancient monuments in Bangor Cathedral, and amongst them there is not now a single recumbent effigy. What those mutilated sepulchral effigies may be that lie buried, as I have been informed, within the rails of the communion-table in the choir, whether of some of the ancient bishops or of other persons, I know not. I am told that they were thus deposited about forty five years ago. Should the restoration of the Cathedral be extended thus far, I trust they will be exhumed, and not the less cared for because in a mutilated condition. They may turn out to be those of benefactors whose names ought to be had in remembrance.

The most ancient monument, a sepulchral slab, was found in the restoration now going on, forming the base of an Early English buttress. Taken from its original position in the thirteenth century, it was then thus used. An old church is in these days rarely pulled down for re-construction, but fragments of an older building, or of ancient sepulchral slabs, are found worked up in the walls. This ancient stone has an incised cross of the S. Cuthbert fashion, resembling in outline the pectoral cross of Anglo-Saxon worship found with the remains of S. Cuthbert in Durham Cathedral. This is, I think, certainly not later than the twelfth century; it may be of the eleventh century. The cross is within a circle, and the spandrels are ornamented with a rude resemblance cf a *fleur de-lis*. This stone is uninscribed.

In the south wall of the choir, near the west end, is a sepulchral arch, moulded and pointed This of the fourteenth century. Beneath it is a stone coffin of the same period; the space hollowed for the head is not, however, round, but pointed. In the south wall of the aisle, eastward of the north transept, is another sepulchral arch of the fourteenth century. Of this, however, little is at present visible.

The best preserved ancient monument is within the south wall of the south transept. Here, beneath a plain sepulchral moulded arch of the fourteenth century, on a high tomb, is a coffin-shaped slab, wider at the head than at the foot. On this, sculptured in relief, is a rich floriated cross. There is no inscription on this tomb. Eastward of this monument, in the south wall, near the east end of the transept, is a piscina, or water-drain, indicative of a chantry chapel here placed: and the tomb is, in all probability, that of the founder. The archives or episcopal registers of the Cathedral would, I think, furnish a clue as to the worthy of the fourteenth century of whom this tomb was commemorative. I do not think he was one of episcopal rank. Had he been the "*Baculus pastoralis,*" the emblem or symbol of the office would probably have been sculptured upon it.

Buried outside of the Cathedral, and discovered during the progress of the present restoration, was the mutilated bust of a bishop of the early part of the seventeenth century. This is now placed temporarily in the choir. The head and arms are gone, but the vestments are clearly developed. He is represented as vested in the rochet and chimere, with the academical tippet worn over the shoulder and hanging down scarf-like in front. This bust is rudely sculptured in what appears to be a kind of clunch. It is, however, even as a mutilated fragment and record of the past, deserving of being carefully preserved. Brown Willis, in his survey of this Cathedral, published in 1721, treating of the choir, says:—"On the north side are the effigies (or rather busts) of two bishops, viz., Bishop Vaughan and Bishop Rowland, which are put close to the wall, though they seem to be in a niche. The effigies are of alabaster, with a sweep of the same materials from the waste (waist) upwards in their habits, each upon a cushion, the hands of one in a praying posture, the other with one hand akimbo and the other resting on a Bible. Their heads were beaten off in the time of the Rebellion, but the inscription, which is on black marble, and was put up by Bishop Rowland a little before his death, is still remaining." He then gives the inscription, a lengthy Latin epitaph, commencing with "*Piæ memoriæ duorum Episcoporum in hac ecclesia proxime succedentium,*" &c. Bishop Vaughan died in 1607, Bishop Rowland in 1616, in which latter year the monumental busts were set up. Of which of these two worthies this mutilated torso may be commemorative it is difficult to say. It is of a class of monuments introduced early in the seventeenth century, and of which that of Shakespeare, in the church of Stratford-upon-Avon, has been considered as an early example. Shakespeare died in 1616, the very year these busts were placed in the Cathedral of Bangor.

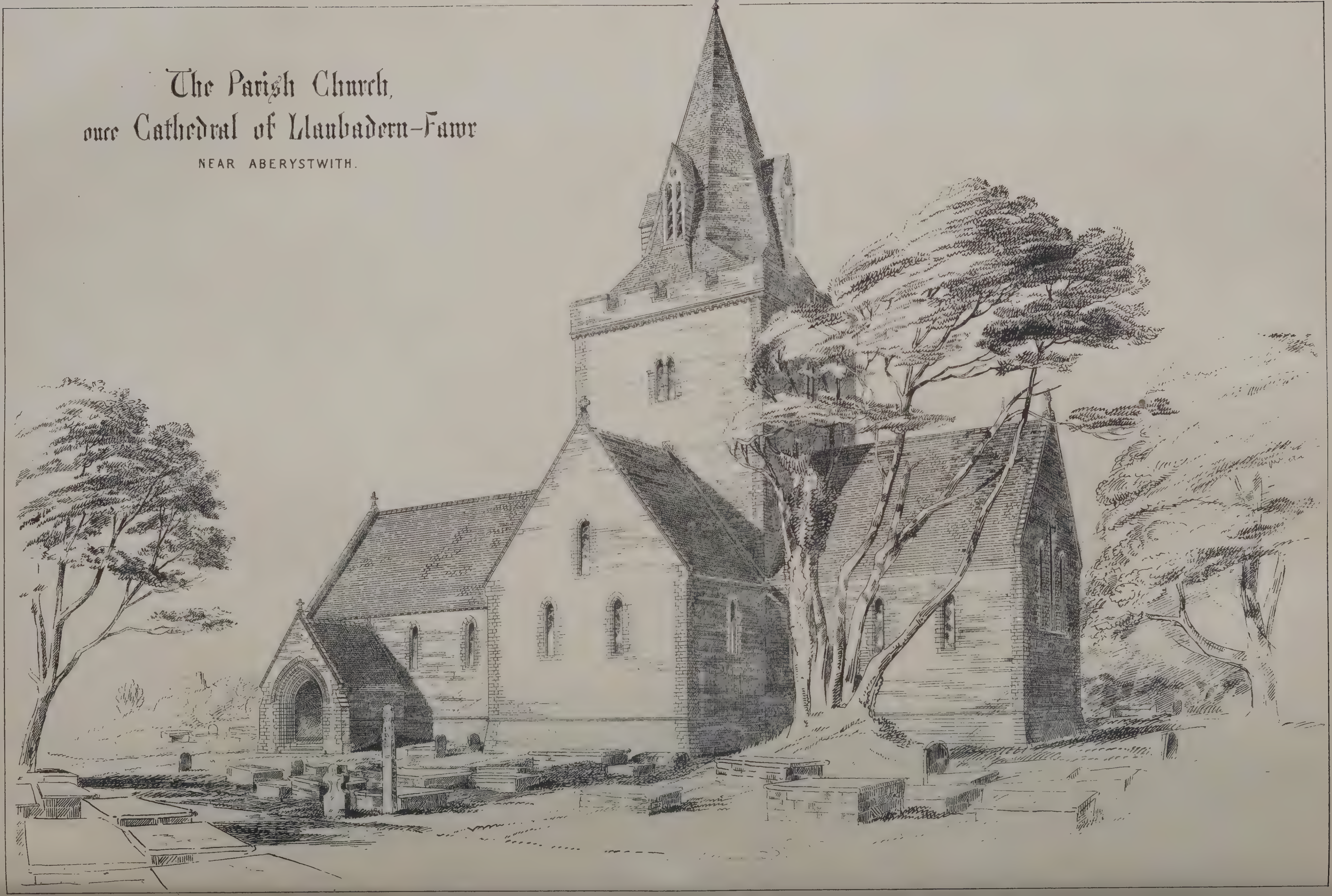
◆

COMPETITIONS.

The Metropolitan Railway Company's Surplus Lands.—We are glad to see that the directors of the Metropolitan Railway Company are losing no time in carrying out the plans referred to in the last report for disposing of the surplus lands which have for so long a time been imposing a heavy burden on the company. Premiums are offered to the following amounts for the best designs for the utilization of the building estates on the company's line from Moorgate-street to Brompton:—The company's Barbican estate, 70 guineas; Smithfield estate, 100 guineas; Farrington road estate, 50 guineas; Clerkenwell estate, 50 guineas; King's Cross estate, 50 guineas; Edgware-road estate, 50 guineas; Praed-street estate, 50 guineas; Linden-grove estate, 50 guineas; Campden-hill estate, 50 guineas; South Kensington estate, 50 guineas. Plans of the above estates may be obtained at the company's offices, and designs are to be submitted before the first of October next.

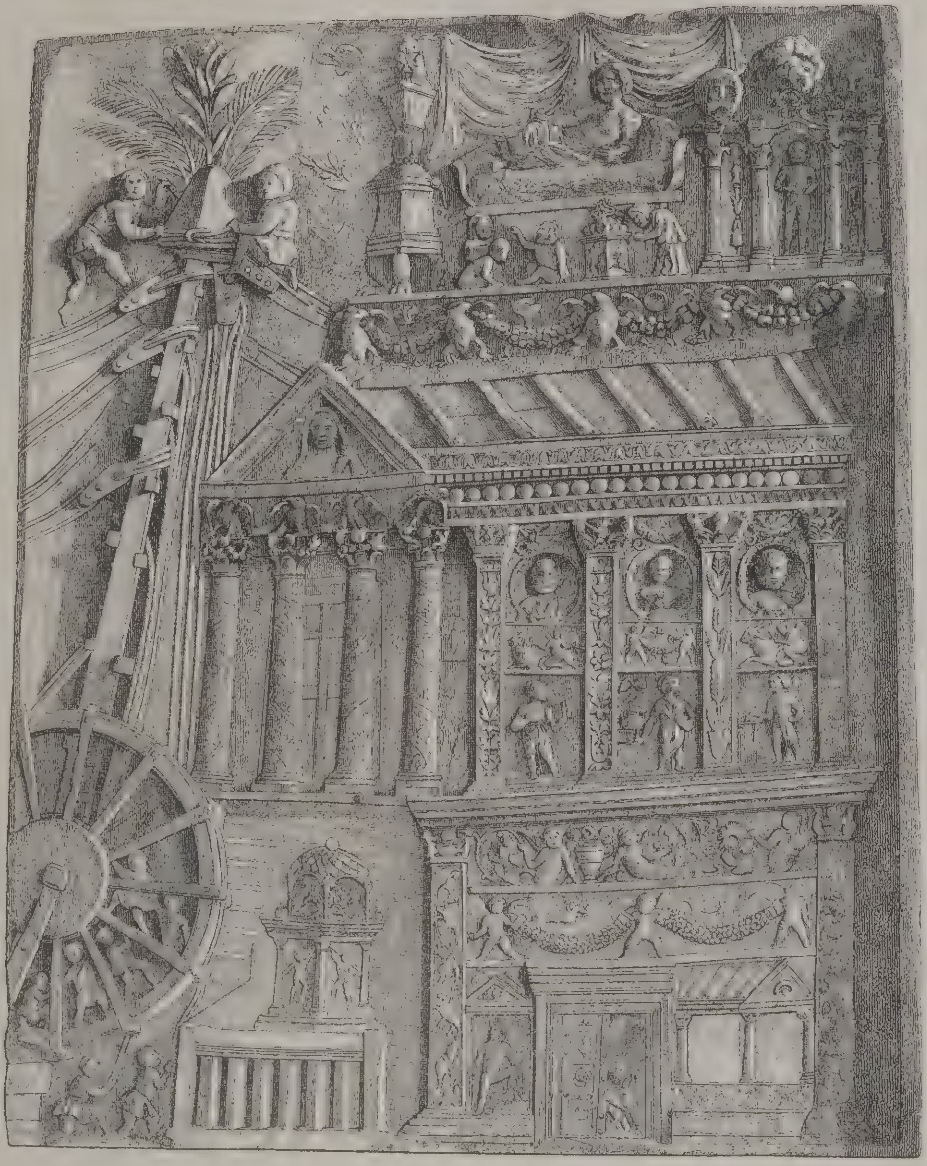
◆

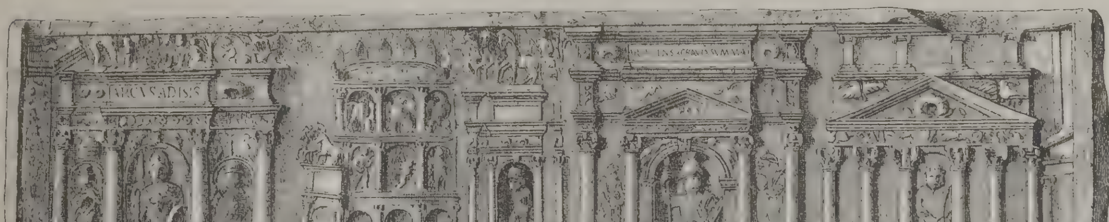
The New Forest.—A correspondent, writing on the subject of the New Forest, says that before the Crown can claim one inch of the soil as its own, the claims of the commoners (whose number is legion) must, as long as law exists in England, be redeemed. These commoners hold 67,000 acres of freehold land in and around the Forest, to which are attached rights of common over the 63,000 acres of Crown lands. Their claims are the very reverse of encroachments; their origin is distinctly known, and proved to have existed before William Rufus made a forest. To redeem these commoners' rights would absorb more than half the acreage of the New Forest.



The Parish Church, once Cathedral of Llanbadern-Fawr

NEAR ABERYSTWITH.





B. Abbott Lith
Printed by Whiteman & Bass

SCULPTURES FROM TOMBS OF THE FIRST CENTURY, IN THE LATERAN MUSEUM AT ROME,

SUPPOSED TO BE THOSE OF ARCHITECTS.

Furniture & Decoration.

THE THEORY AND PRACTICE OF MODERN HOUSE PAINTING AND DECORATION.

By An Experienced Workman.

PREPARATORY PROCESSES.

(Continued from page 137.)

FLATTING should never be used thick on large surfaces, because the turps evaporates so quickly that it is impossible to make a good job if it is so used. In laying the colour on the wall it should be worked in strips, as before described, and so quickly as to keep the edges soft or wet, so that the one will work sweetly into the other, and thus leave it free from shady places. On large surfaces, such as staircase walls, &c., this is very rarely successful, unless the work is stippled. Stippling brushes are of different kinds and sizes. Those about 6in. square are the most useful for general purposes. Some are made with the handles crossing the back; in others the handle is formed in one piece with the back; but the most useful brush is the reversible stippling brush recently introduced by Hamilton & Co. The handle is attached by a screw turning in a brass plate fixed on the back of the brush; by loosening the screw the brush can be reversed, thus enabling the workman to obviate the uneven wearing of the bristles. The pressure in working a brush of this kind naturally bears more upon one side than another, and thus the brush becomes unequal-sided, which defect this simple invention effectually prevents. In stippling, the colour is laid on pretty freely in the usual manner, and spread as even as the time will allow, but it need not be so particularly done as if it were to be finished without stippling, because the stippler spreads the colour and leaves it equal. The brush is held in the right hand and the work is gently dabbed or stippled with the extreme ends of the hairs, which spread the colour evenly over the surface, leaving it with a slightly roughened face, but also with a solidity and uniformity which cannot be attained by any other means.

In painting a wall in any tint of colour after the first or primary coat—which we have before said is best of a reddish tone of colour—the wall should be brought up to the finishing coat with each successive coat lighter than the one preceding. We thus form a more solid body of colour, for it is an indisputable fact that tints of colour will cover better and appear most solid if we paint each coat a few shades lighter than the previous one. But if we reverse this course, and paint a dark tint upon a lighter one, there will be a want of solidity, and a streaky appearance about it, and it will, technically speaking, "grin," the light colour appearing through the darker one.

In flatting large walls the men should be so arranged one above the other that they can paint a strip of the wall, as before named, from top to bottom. By this means a good and solid job may be made, however large it may be; but except this be done the wall is sure to be shady. Great care should be taken that nothing is missed, for if any part is omitted, or a small patch in a wall over looked, the whole of that wall is spoiled, it being a peculiarity of flatting that it cannot be retouched without the same being distinctly seen. Flatting colour, if touched after it is set and before it is dry, will be glossy, or partially so, in every part where it has been touched, and, therefore, if a part of a large wall be touched or missed in flatting it necessitates the wall being redone—that is to say, the wall will have to be painted with the gloss colour and reflatted, for flatting upon flatting never makes a good job.

When old walls have to be repainted, they should first be repaired and then washed down with a weak solution of ordinary washing soda and water, in order to clean off all dirt, grease, gas-smoke, &c., &c. We thus insure the first coat drying and being clean. It will be evident to the meanest comprehension that this method is better than to fasten all the dirt and filth with a coat of clear-cole (which is a very common but a very bad practice) and then paint over it. If the wall has to be flatted, the first coat should be mixed with two-thirds turps; the second, gloss, or oil colour, to receive the flatting. It may be taken as a rule that new walls cannot be made a good job under five coats, and they are much better with six, while walls being repainted always require three coats for a good job.

In the painting of woodwork it is necessary to proceed with much more care and greater nicety in the working, and more skill and practice in the manipulation will be required. In painting new woodwork the first care should be to see that the work is well dusted, for in even the best joiners' work a large amount of fine dust results from the wood being rubbed smooth with glass paper, and this penetrates and lies in the quirks and behind the mouldings, and if great care is not taken to clean it well out it will be taken up with the paint brush in working, and thus make the work rough. Before commencing painting the knots in the wood should be "killed," in order to prevent the resin from oozing out from them, or from discolouring the paint. It will often happen that when the knots have been imperfectly covered they will, after a time, make their appearance in yellowish brown patches through five or six coats of paint. There are several modes of what is technically called "killing" the knots, and preventing them again making their appearance. Red lead and strong glue-size, mixed together and used hot, is an effectual cure, but this method cannot be used on good work, because its necessary thickness forms a projection on the surface, which cannot be got rid of except by filling up the whole of the work to the same level. Patent knotting (*i.e.*, shellac and wood naphtha), as its name indicates, is made expressly for obscuring knots, but it is used for many purposes besides. The knot requires to receive a strong coating of this substance, but the projection thus caused is not so objectionable, being smooth and very little above the surface of the wood. A very effectual method is to cover the knot with a coating of gold leaf in the ordinary manner; this is almost a certain cure, and of course has no projection; but when the knot is large, or very full of resinous turpentine, the only safe plan is to cut out the knot and let in a piece of wood in its place. There is, in fact, no other radical cure for a bad knot, or for most knots which are much exposed to the direct rays of the sun or heat. Before the wood is painted the quirks should be examined to see that there be no rough places left from the plane. If there are any they should be rubbed smooth with sandpaper, which will be much more easily done at this stage than afterwards. Doors, architraves, and all panelled and moulded woodwork, require painting with care in order to produce good work. The same rules will apply (in degree) to new woodwork as to new walls, in so far as the first coat should be more oily and have less white lead in it than any of the subsequent coats; if there is more lead in the priming than is necessary the wood absorbs the oil so quickly that the lead gathers on the surface, and in laying off gets thick and streaky. The quirks, edges of fillets, and mouldings should be well looked after, so that there be no "fat edges" left, *i.e.* thick ridges of paint caused by the brush being caught on the sharp edges in laying off. The work should be carefully rubbed down between each coat with fine sandpaper. It is well before using the paper to rub two pieces of it together or against each other; this serves to take off the sharp edge of the sand or glass, and thus prevents it scratching the paint. If great care is not taken in rubbing down the mouldings and sharp edges, they will be rubbed bare and the paint taken off, which causes them to look bad at the finish. All nail holes and other uneven places should be stopped, and faced up with hard stopping. Ordinary glaziers' putty will suffice for common work. It is a good plan to use the badger-hair softener to finish laying off the paint upon panels and stiles of doors, &c., as it obliterates the marks of the brush better than any other means. The stippler is very rarely used on woodwork, as it leaves a roughness not suitable for such work. In painting a door in flat colours it is best to paint the panels first, then the stiles; but in doing the stiles they will require to be quickly worked, or else the colour accumulates at the joints of the cross rails and stiles, and makes a ridge which should be avoided. We have found it best to commence at the bottom and bring on the stiles and cross rails together. We thus keep all sweet and wet together, and avoid the accumulation at the joints. If the quirks are tinted a different colour from the mouldings and stiles they should be picked in before the stiles are done, in order to keep all sharp and clean.

(To be continued.)

THE TREATMENT OF OPEN SPACES IN LONDON.

OPEN spaces with us are called squares, while in America they have hitherto been known as parks, and on the Continent as promenades. In London these are, as a rule, not quite so satisfactory as they might be, owing chiefly to the ground in them not having received in the first instance proper preparation for the reception of the shrubs and trees with which they are planted. In a few instances, however, we have some fine specimens of trees in our metropolitan squares and other open spaces. In the gardens belonging to Gray's Inn, for instance, there is a noble Catalpa, which, on account of its being reputed to have been planted by Lord Bacon, is called the "Bacon tree." Its aged limbs sweep the ground of this garden, which is six acres in extent, contains a noble walk, called Queen Elizabeth's Drive, and some good elms and plane trees, one of which is stated to have been planted by Addison. This garden during half the year is thrown open to the children of the neighbourhood, who so thoroughly enjoy the treat that when they get home in the evening after rolling on the grass they are as black as negro minstrels.

Nothing delights a townsman so much as to get his feet upon soft turf, a gratification which thousands of all ages enjoy. This fact receives daily verification in S. James's Park, which can claim to be little more than an open space laid out rather prettily in the gardenesque style, and evidently with a view to public instruction as regards acquiring a knowledge of the correct names of trees and shrubs. These were, I believe, selected, arranged, and named by Don, somewhere about a quarter of a century ago, but now the grouping together of families, which was the system of arrangement that botanist employed, is in a great measure lost sight of; still attention is paid to labelling, an operation which adds interest to the shrub-masses in this park. Here, too, on the lake is an excellent collection of waterfowl, the feeding of which affords a never wearying source of enjoyment to children, and even to older spectators. As far as extent goes, S. James's Park must be admitted to be one of the most popular of London open spaces in which entire freedom of grass-promenading is permitted.

Lincoln's Inn, a fine town square of 7 acres in extent, unlike S. James's Park, is closed to the public, which is to be regretted, for to look upon the merry faces of the young on a fine summer's day in such places does one's heart more good than the small degree of quietude their closed condition can ever afford. In this square are a few fine planes and thorns. The shrub masses are mostly privet, relieved by pelargoniums and similar flowers in summer, and by chrysanthemums in autumn.

The Inner and Middle Temple Gardens, remarkable for their annual displays of chrysanthemums, afford examples of fine open town spaces. Here, during a certain period of the year, children are admitted to romp and play on the grass as they please. The late Mr. Broome, the well-known advocate for throwing town enclosures open to the public, asserted that although there were often as many as 11,000 children daily in these gardens, neither flowers, shrubs, nor trees received any injury. The Temple Gardens, therefore, indicate the way in which open town spaces can be utilized for public benefit.

Setting aside the open spaces just adverted to, the newly-made parks of Finsbury, Southwark, Kennington, and others, there are still plenty of other squares, as, for instance, Berkeley and Grosvenor-squares, which, if open to the public, would be real boons to the thickly-packed inhabitants of the neighbourhood. But they are not open, and it is of this we have to complain. Closed as they are at present, they are, in fact, obstacles in the way of direct transit from one point to another; "they do things better in France" and other Continental countries, as well as in America, in which all have free access to such places, and in which recreation is as much sought for as in the parks. In London, it is true, there seems of late to be a disposition to improve its town spaces, and to throw them open to the public, but much in that way must yet be done before a perfectly satisfactory result shall have been arrived at. Among our town spaces lately opened and ornamented may be named Paddington and Islington-greens, Camberwell-green, and others, the use of which is evidently appreciated by the public. But it may be said, Who is to maintain and keep in order our open spaces? I say some body of management similar to the Board of Works, to which some power in the matter has, indeed, already been given, but as yet it has been inoperative, else surely we should not have had so long such a standing disgrace among us as Leicester-square, and others to which allusion might readily be made.

As regards the treatment of town squares, I am of opinion that they should be wholly planted, or very nearly so, with trees of a stately character, which will grow up so as to allow people to promenade under them. In this way the most would be made of the space, which should consist wholly of walks, grass, trees, and a few low shrubs here and there. Fountains and basins with fish should also be provided, not in order that they may throw water to a great height, but tastefully constructed drinking-places supplied from hydrants, to which, likewise, should be attached a hose for washing the trees and watering the turf. In this way the French manage to keep their grass and trees in beautiful condition, and without such an arrangement no London square, owing to the constant treading which it must necessarily receive, can ever be maintained in a fresh and green state. Without washing, too, trees loose their leaves much earlier than they otherwise should do, and when young especially their success is comparatively uncertain, owing to the over drainage to which towns are subjected. Flowers, as a rule, I would reject, though in some places their introduction might not only be admissible but necessary. Thus, when private right in the matter of town squares shall have yielded up its interest for the public good—when it shall have allowed our at present enclosed spaces to be opened, those frequently unsightly shrub masses to be removed so as to increase the grass surface—when broad, good, and dry walks shall have been made, and plenty of seats provided, then, and not till then, shall we acquit ourselves as Englishmen in this matter. Our thoroughfares are being yearly enlarged and improved, let, therefore, our squares be opened and improved also. They will then not only form delightful retreats for the aged and infirm from the more active scenes of public life with which they are surrounded, but will furnish healthy breathing spaces second only in importance, in a sanitary point of view, to our great parks themselves.—J. Newton in the *Gardeners' Chronicle*.

◆

THE WOLSEY CHAPEL AT WINDSOR.

MRS. MARK PATTISON, in a recent number of *The Portfolio*, describes the works of Baron de Triqueti, in the Wolsey Chapel at Windsor, as now far advanced. The walls, right and left, are filled with marbles, and only the east end is vacant. At a sufficient distance from the ground to admit of seats being fixed beneath them, range, panelled on either side, a series of Scriptural subjects selected by the artist as illustrative of the acts and virtues of the late Prince Consort:—

In reference, for instance, to the interest taken by the Prince in the matter of popular education, w have Jehoshaphat directing the teaching of the people by the princes, priests, and Levites. These pictures are executed in inlaid marbles and lithographic stone, which affords a very valuable tone for decorative purposes. The cartoons for them, on completion, are transferred to the marbles, which are then deeply etched, and the lines filled in with a composition (unlike the mastic previously used) as durable as marble itself. Each picture is bedded in a deep-toned marble framework, inlaid with floral designs, and enriched by small reliefs in white, and by medallions in red marble of the obverse and reverse of the coins of the year in which the event depicted happened. For instance, beneath "The Agony in the Garden," the obverse and reverse of the coin of Tiberius occur. Derbyshire spars employed occasionally in this portion of the work impart an unlooked-for brilliancy to the whole. White marble medallions of the children of the Queen and Prince, executed by Miss Durant, are introduced above each picture, and separating each, but embedded in the same decorative frame, come reliefs of the various Virtues.

M. de Triqueti, says Mrs. Pattison, has fulfilled his difficult task with equal fidelity and taste. The subjects treated are of general interest, though susceptible of special application by those deeply concerned. The compositions which make the least pretension to pictorial effect have been the most efficiently rendered in the sober scale of tints afforded by the materials employed:—

In such materials a blaze of colour is impossible, but a vast variety of delicate and subtle harmonies lie within reach especially adapted for rendering serious monumental design. Though at present lamentably disturbed by the garish paint and gilding of the ceiling, and the equally garish glass of the windows, the general effect of the marbles promises to be rich and harmonious. The execution by one man of a scheme demanding such varied attainments must necessarily leave something to be desired, however versatile his powers. The drawing can hardly be characterized as thorough, and has probably suffered much in the process of transferring the cartoons to marble. But whatever may be lacking, the work of the Baron de Triqueti is conceived in the spirit of a genuine artist without reference to profit or applause. What has been done at Windsor has been achieved by legitimate methods, and the completion of this memorial work will be the inauguration of a new and valuable idea in the world of decorative art.

◆

THE ARTISANS' AND LABOURERS' DWELLINGS ACT.

THE Artisans' and Labourers' Dwellings Act, empowering vestries and district boards to take down or improve dwellings occupied by working-men, is producing beneficial effects in S. Luke's parish. Upwards of fifty houses have just been brought under its operation, and the object of the Act successfully accomplished. The Act gives very arbitrary powers, which are required to be exercised under special formalities. It provides that if any premises are found by the officers of health to be in a condition or state dangerous to health, so as to be in his opinion unfit for human habitation, he is to report the same in writing to the vestry, and such report is to be referred to the official surveyor, who shall thereupon consider it and report to the local authority what is the cause of the evil so reported on, and the remedy, whether the same can be remedied by structural alterations and improvements or otherwise, or whether the whole or part ought to be demolished. Copies of these reports are to be forwarded to the owners of the premises, a time and place is to be appointed by the vestry for their consideration, and the owner is to be at liberty to attend and point out any objections that he may have to make. In the event of an order not being complied with by the owner, it is provided, subject to appeal, that the vestry shall, as the case may be, either order the premises to be shut up or to be demolished, or may themselves execute the required works in conformity with a specification to be prepared by the surveyor, and, shall the vestry think proper to execute the works, provision is made for the recovery of the costs and expenses. There has only been one case reported in the parish of S. Luke wherein the owner of premises refused to comply with the orders of the vestry, and intimated his intention of appealing to the Quarter Sessions, but on further reflection he deemed it prudent to carry out the order, and has since converted the dwelling-houses into stables.

AMERICAN SLATES.

ALTHOUGH large deposits of slate have been known to exist in the United States, but little has been done to develope them until within the past few years; yet they are now assuming pretty considerable dimensions. The slate region of Vermont consists, according to the *Mining Journal*, of a belt of country lying about midway between the Hudson River on the west, and the foot-hills of the western slope of the Green Mountain range on the east. A strip of land, 20 miles long, and 3 or 4 miles in width, having Poultney, Vermont, for its centre, would cover all the quarries of any value that have been opened. This belt lies, in fact, partly in Vermont and partly in New York. It is about 60 miles from Troy, and about 9 or 10 miles from the foot of Lake Champlain. The slate formation itself is much more extensive than this, extending the whole length of the slate. This deposit of argillaceous rock belongs to what is known in the records of geological history as the Devonian period, and, consequently, occupies a very low position in point of time in the scale of geological formations. This slate formation has an average strike (say) of north 15° east, with a very varying dip eastward, ranging from about 15° to 55°. The stratification of the beds is not, of course, uniform throughout. At some points it is very irregular, and, therefore, not adapted to the manufacture of good roofing-slate; at others it is remarkably even, and affords material in almost inexhaustible quantities for slate of the very best quality. There does not seem to be a very large admixture of foreign mineral matter accompanying the slate beds. Of those that are found, however, may be mentioned veins or threads of calcspar or carbonate of lime, quartz, and now and then traces of iron pyrites, either in an arborescent or crystalline form. The former cut across the planes of stratification of the slate rock, and are often so numerous as to render the slate beds wholly worthless, in so far as the manufacture of roofing-slate is concerned; but, fortunately, these veins are only of local occurrence, and quite limited in extent, so that when, in the working of a quarry, they are encountered, they are considered an evil to be got rid of at a greater or less cost, rather than a permanent obstacle in the way of the further development of the property.

The number of quarries at present in operation in the Vermont slate district is about 100, which may be divided according to their geographical position into distinct groups. In the Middle Granville group there are about a dozen quarries now being worked, all, with one exception, making roofing slates. The predominant colours of the slates manufactured in this district are red, purple, green, and variegated. Considerable pyrites is found—more here, perhaps, than in any of the other districts. It is well worthy of mention that in this group are located the only quarries of red slate to be found in the country, if not in the world. The slates obtained from it are of the very best quality, being very smooth, fine-textured, and unchangeable in colour. They are used only for ornamental work, in connection with the purples and greens; and, on account of their scarcity, bear in the market nearly double the price of the ordinary coloured slates. The Jamesville and Hampton group is to the northward of that just mentioned, and likewise in Washington county, New York. The slates are here very irregular, both as regards colour and quality; mottled green, perhaps, predominates. As to texture, this group furnishes, upon the whole, a finer grained slate than the Middle Granville Quarries. The slate from this circle of quarries is shipped at Poultney, in Vermont, on the line of the Troy and Rutland Railroad.

The Poultney group, which is the most extensive of all, is still further to the northward, and situated in the State of Vermont. There are here about thirty quarries being worked, and devoted for the most part, with the exception of the Eagle Quarry, to the manufacture of roofing slates. From the quarries of this Poultney group the finest roofing slates in America are, perhaps, produced. The great body of them consist of fast-coloured purples and greens. The stock from which they are made is very fine grained; in fact, as good as any that the country affords. A large number of slates are made from these quarries. They are sent to the market, in greater part, from Hydeville, about midway between Whitehall and Rutland, on the Rensselaer and Saratoga Railroad. This may be considered the chief group in importance, as it is the central one in position of all the quarries in the district. At Fairhaven, to the north-west of Poultney, there are about a dozen quarries, some producing roofing slates and some producing slabs; and to the eastward of Fairhaven are the Castleton Quarries, producing all slabs. Of the 30 quarries that make up the Poultney group there is but one in the hands of an incorporated company, the rest being held by private owners; and as an evidence of the value of the slate formation in this locality for roofing and other purposes, it may be remarked that some 20 of these quarries have been opened within the last three years, and nearly all of them are doing well. Among the Fairhaven quarries the Scotch Hill is the principal. This is in the hands of a Boston company. In the last, or Castleton division, are found, as the more prominent, the West Castleton, Cookville, and Billings quarries. It is the practice throughout the district that the slabs are worked by mill companies in many instances, not the owners of the quarries; they buy the stock in the rough from the quarrymen, and send it to market in the form of billiard beds, mantelpieces, and the like.

In the Vermont district quite a number of Welshmen are employed. They are very successful in their works, many of them having come into possession of quarries, which they carry on themselves, and generally with success, owing, perhaps, to the fact that they thoroughly understand the business. As yet very little machinery is employed in getting out the slate from the quarries, or in splitting it up into sizes suitable for roofing purposes, though some attempts in that line are at present being made. Machinery is very extensively employed in finishing it for mantelpieces and other purposes.

The immense deposits of slate in Pennsylvania are extensively worked. The largest and most northerly of these is that situated in Northampton and Lehigh counties. The great shipping points for this region are Slatington and Walnut Port. In these two counties, Northampton and Lehigh, there are some 300 companies engaged in working slate quarries. South of this is the Peach Bottom region, in Pennsylvania and Maryland. From these regions is supplied most of the slate that comes to tide water. Slates from this part of the country are of a firm texture, split readily under the chisel, and are dark blue in colour. Another slate region exists in Brownville, Maine, some forty miles north-west from Bangor. The slates obtained from these quarries are of a uniform black colour, hard and durable. These quarries labour under the disadvantage of being some forty miles from railroad or shipping point. These slates do not usually come further west than Boston, on account of the great cost of transportation, &c. Several railroads are, however, in course of construction, which will give an outlet for this industry.

◆

THE ROMFORD SEWAGE FARM.

THE irrigation of land by sewage is a subject which has of late become of great interest and importance, especially in Essex, and on Tuesday week last some further proofs were received, in addition to those already obtained, of the great success with which the refuse of towns may be applied to the improvement of the soil, and of the great increase in the produce thereof under such treatment. On the occasion referred to a party of gentlemen, amongst whom were Mr. E. Chadwick, C.B., Mr. H. Corbet, Mr. R. Rawlinson, C.B., Mr. J. G. Fanshawe, Mr. J. M. Grant, C.E., Colonel Hogg (Metropolitan Board), Mr. A. Johnston, M.P., Mr. E. B. Eastwicke, C.B., M.P., Mr. T. W. Keates, F.C.S., Mr. J. H. Lloyd, Sir T. B. Lennard, Mr. J. B. Denton, C.E., Mr. B. H. Adams (Metropolitan Board), Mr. R. Morgan, C.E., Mr. W. Russ, C.E, Mr. B. Gooch, Mr. A. Tod, Mr. C. Freeman, &c., with several members of the Romford Local Board, had been invited by Mr. W. Hope to visit Breton's Farm, Hornchurch, which has been purchased by the Romford Local Board of Health for the disposal of their sewage by irrigation, and let to Mr. Hope, the well-known lessee of the sewage of London. The main object of the visit appeared to be for the purpose of inspecting the result of the application of sewage to the land and crops, which has, notwithstanding the difficulties which surrounded him in the first place, been carried out with a great degree of success under the skilful management of Mr. Hope. On the arrival of the company at the house, they at once proceeded to look over he farm. One of the first crops to which attention was drawn was a piece of Italian rye grass, sown on March 19, since which four crops have been cut, averaging 7½ tons per acre, and sold for £1 per ton on the ground. Close by was a piece of Dalmahoy potatoes, planted on April 2, which were producing upwards of 1½cwt. per rod, and worth about £25 per acre. Some of these were very large. Some "Early Rose" kidneys were also shown, which produced ten or twelve at each root, many being from 4in. to 7in. in length. Some beans and peas, sown on April 2, produced, the former £9 and the latter £15 per acre, without the straw. Another piece of rye grass, sown April 9, will be ready to cut for the fourth time in a few days. Next came some dioscoreas or yams, planted on June 6; adjacent to these were some very large Jersey cabbages, about 5ft. in height; these, if successful, and under favourable circumstances, may reach a growth of 10ft. A little further on there was a specimen patch of clover, sown on May 23, which was very thick, and about a foot high. Adjoining, were about four acres of transplanted mangold-wurzel, looking rank and strong. Another crop of the same kind exhibited some very fine roots, many of the globes being over two feet in circumference, and some of the long two feet in length. Close to these was a crop of parsnips sown on the 28th April, which averaged from 1½in. to 2in. in diameter, and of a proportionate length; also a fine crop of cauliflower planted on the 19th July. Some fine carrots, crimson beetroot, and runner beans are also growing. We may here add that the runner seed, as well as that of several of the other crops, was of such bad quality that a great deal did not grow at all, so that there are occasionally bare patches of ground. In addition to those already named there were some fine pieces of bunching and other kinds of cabbage, which promise good crops, having been planted about the middle of June, and being very regular. A strip of a newly imported kind of grass, called *Bromus odoratus Australiacus*, was sown on the 4th June, and was cut on the 1st August: this, if the trial proves successful, it is expected will, to a great degree, supplant the Italian rye grass, being perennial, and lasting much longer than the latter. Following this comes a fine crop of maize, or Indian corn, for ripening, sown on the 2nd June: it averages from 3ft. to 4ft. in height, some of the heads reaching nearly if not quite 5ft. A strip of American oats looks very fine, though somewhat laid by the recent storms; these are said to produce 20qrs. per acre. Close by was a crop of intermediate carrots, about 4 acres in extent, sown on the 4th of April, a month later than they ought to have been. Some of these have already been cleared off and sent to market, where they fetched at the rate of £41 per acre. Those that still remained had been sold as growing at £21 per acre, it being worth the additional amount to prepare and get them to market. The above may be considered as the principal crops, but there are many others, most of which have been put in for purpose of trial, and are not large in extent, but all appear to be more or less successful. As each crop is labelled, showing the time of planting and the results that have been achieved, the beholder cannot but be astonished at the rapidity with which the various crops have sprung up, and reached their present state of growth.

With regard to the manner in which the sewage is put upon the land: it is first pumped to the top of the engine-house, and then conveyed in sheet-iron troughing to about the centre of the farm, where it branches off in all directions, there being outlets at short intervals, which can be opened for the discharge of the liquid or plugged up, or even set to a certain quantity, as required. The sewage eventually flows into channels of concrete or earth, and thence again into smaller off-shooting channels which run along in the crown of the beds, the ground having been originally laid out in proper inclines; these smaller channels are then dammed up where required, and the sewage overflows the beds. Of course, there is a large amount of effluent water which percolates through the soil, and this is carried back again in a state of purity to the tank, or down to the river, at pleasure, by drain pipes laid at a depth of 6ft. from the surface, and at a distance of 150ft. apart.

The effluent water was clear and sparkling; most of the company drank some of it, pronouncing it excellent, and we were informed by Mr. Hope that it not only compared favourably with the well water of the district, when tested with permanganate of potassium, but that it also resists even Reinsch's new test, which is generally considered by chemists one of the most delicate tests yet discovered. Though the system and works are not so complete as they will be after a time, yet, judging from the present appearance of the crops, there can be but little doubt of the success of the project when it shall have been carried out in its entirety; and we cannot but congratulate the board and the ratepayers of Romford on being the owners of what appears to be so valuable a property, and one that will render such large returns.

On this occasion the company were much assisted in their investigations by Mr. Russ (of the firm of Messrs. Russ and Minns, engineers, who designed and executed the outfall works), who attended and explained their nature and cost, &c., and gave every information in answer to the numerous inquiries addressed to him, as did also Mr. J. R. Harding, the board's surveyor, and Mr. Avis, the bailiff on the farm.

It is stated by the *Essex Times* that the sewage of Romford is conveyed by a culvert nearly three miles in length from the town on to the farm by gravitation, and is then pumped about 23ft. high into carriers, and distributed in the manner before described.

◆

ARCHÆOLOGICAL.

WILTS ARCHÆOLOGICAL SOCIETY.—The visit of the Wilts Archæological Society to Wilton on the 14th, 15th and 16th proximo promises to be of unusual interest, both in regard to the papers announced to be read and the excursions which have been planned. On the first day the chair will be taken by Mr. C. Penruddocke, who will open the meeting with his inaugural address as President of the Society. This will be followed by a paper by the Rev. D. Olivier, "On Wilton Church," and by a paper by Mr. W. W. Ravenhill "On the Trial of Colonel Penruddocke, of Compton, at Exeter, for high treason, and the surrounding circumstances." After this an opportunity will be given to visitors to inspect Wilton Church and Wilton House. The usual dinner will then take place, and at the *conversazione* in the evening Mr. Nightingale will point out and explain the objects of interest which are to be visited in the excursion of the following day; to be followed by other papers by the Rev. G. S. Master and the Rev. W. H. Jones. On Thursday the excursionists will lunch at Ferne with Mr. T. F. Grove, M P.; after which they will visit Wardour Castle, Place Farm, Fonthill Gifford Church, Fonthill Abbey, Fonthill House, Fonthill Bishop Church, Chilmark Church, and Compton House, where the company are invited by the president to a picnic dinner. The next morning will be devoted to the South Wilts and Blackmore Museums, where the party will take lunch with Dr. Blackmore and Mr. E. T. Stevens. In the afternoon there will be an excursion to Longford Castle, S. Nicholas's Hospital, and other objects of interest in the neighbourhood, returning to Wilton at five o'clock.

OLD BRIDGE AT TAUNTON.—An interesting relic of antiquity has just been saved from destruction in this neighbourhood. The object referred to is an old bridge, called Ramshorn Bridge, crossing the stream at Galmington, and commonly supposed to be of Roman origin. The bridge having become so worn on the crown that holes appeared and it had become dangerous, the highway board took it in hand and repaired it with bricks, &c, entirely destroying its character. The attention of some members of the Somersetshire Archæological Society was drawn to the subject, and the result was that a subscription was entered into among some friends in order to restore the bridge to its original state. This has now been done, the bricks having been removed and replaced by hewn stone in character with other portions of the bridge.

◆

BOOKS RECEIVED.

The Practical Solution of the Great Sewage Question, by William Justyne (London: J. B. Day), is a compilation embodying the leading principles and results of the different schemes for the utilization of town sewage. A careful investigation of the irrigating and precipitating processes has led the author to the conclusion that in a proper combination of them is to be found the real solution of the sewage problem.—*Land and Houses*, by John Parnell (London: Effingham Wilson), is a tract having for its object the enabling investors in houses and land to form some idea of the various natures of investments, stripped of all legal and professional verbiage. A series of very useful tables is added.—*Stables and Stable Fittings* is issued by the S. Pancras Iron Company and contains hints for the erection and proper maintenance of stables, founded on the principle on which their stable fittings are constructed.—*Sussex Archæological Collections*, published by the Sussex Archæological Society (Lewes: G. P. Bacon), Vol. xxii., is the yearly record of the transactions of the Sussex Archæological Society. It is always a respectable and fairly illustrated volume, and generally contains papers of interest to all archæologists. In the present volume Mr. Turner's paper on the Mural Painting recently discovered in Wisborough Green Church is especially interesting.

Building Intelligence.

CHURCHES AND CHAPELS.

Aberystwith.—A new English Baptist Chapel was formally opened for Divine Service on the 11th inst. The building is situated on an elevated site in Alfred-place, and holds a central position in the town The style of architecture is a harmonizing combination of Early English and Gothic. The building seats from 450 to 500 worshippers, and has been erected in a most satisfactory manner by Messrs. Lewis Evans & Son, builders, from plans prepared by Mr. Richard Owen, architect, of Liverpool.

Burton-on-Trent.—The foundation stones of a new Wesleyan Chapel were laid on Wednesday week. The style adopted will be Gothic, of the Early Decorated period. The plan of the chapel is in form a parallelogram, being 60ft. long on the ground floor, 84ft on the gallery, and 51ft. in width. The main body will be divided into four bays by light iron columns with moulded capitals. The accommodation provided will be for 860 adults, and it is expected the work will be completed by the end of August, 1871. The builder is Mr. George Lilley, of Ashby-de-la-Zouch, and the stonemason Mr. David Bassett, of Burton-on-Trent, whose joint contracts, including the tower and spire, amount to £3,365. Mr. Edward Holmes, of Birmingham and Burton, is the architect employed.

Bury St. Edmunds.—A handsome oaken lectern, executed from the designs of Mr. A. W. Blomfield, architect, by Mr. Lot Jackaman, of Bury, has been presented by the latter gentleman to the church. The lectern stands on a graduated and moulded base, the upper portion of which is enriched with quatrefoil cusping. From this rise half-a-dozen moulded buttresses (three on each side), which are surmounted by carved and crocketed finials. Between these is a reproduction (or nearly so) of one of the Perpendicular windows of the church, the spandrels being filled with foliated ornament. The desk is supported on either side by five brackets, three of which are handsomely carved, and correspond in position with the crocketed finials, whilst the two intermediate ones are plainer in character, and have for their terminations the carved pendants at the western angles of the desk. The spaces between the brackets are relieved with foliated ornament, and the mouldings are enriched by pateræ, &c. The front of the desk terminates at either end in an octagonal support, and is composed of a frieze pierced with quartrefoil tracery of a varied character, the sacred monogram occupying the centre: the ends of the desk are filled in with similar tracery.

Dudley.—A new Wesleyan Chapel was opened on Tuesday week. The façade of the chapel is effective, the centre being broken by the introduction of three wide arches, forming the front of an open portico, supported on carved caps and moulded columns. A large wheel window forms the chief feature of the centre gable. The front is flanked on the one side by a tower and steep slated spire, and on the other by a continuation of the principal front. The façade is further broken up by means of buttresses, and flat buttresses relieve the plainness of the sides. The chapel is built of red brick, relieved by Bath stone dressings. The total cost has been £3,000

Fylingdales.—On the 3rd inst. the Archbishop of York consecrated the beautiful new church of Fylingdales, a parish which includes the well-known Robin Hood's Bay. The church is from a design by Mr. G. E. Street, A.R.A., and has cost £6,000

Highbury.—On Saturday the new and handsome church dedicated to S. Augustine, situated in the Highbury New Park, was consecrated by the Bishop of London. The church, which consists of a nave, chancel, and side aisles, with a western tower, is built in the Early Gothic style, and the interior has been expressly designed to present an open and uninterrupted view to a large congregation. The nave is divided from the north and south aisles by five bays, with Gothic arches and clustered columns with carved capitals supporting a well-lighted clerestory. The roof of the nave is open, but the chancel ceiling is ceiled with timber. The edifice is constructed of brick, with ashlar work and stone ornamentation. The structure will accommodate about 1,300 worshippers, without galleries, and it has been erected at a cost of nearly £10,000. Messrs. Perry and Co., of Stratford, have been the builders, and Messrs. Habershon and Pite the architects.

Kellington.—On the 29th ult. the Archbishop of York re-opened, by a confirmation, the parish church of Kellington, which has been completely restored under the direction of Mr. Crossland, architect, Leeds.

Lightcliffe—On Monday afternoon two daughters of Sir Titus Salt laid the memorial stones of a new Congregational Church at Lightcliffe. Erected in the Geometric Decorated style of Gothic, the church — the plans for which have been furnished by Messrs. Lockwood and Mawson, of Bradford—promises to prove an elegant as well as substantial structure. It will consist of nave, side aisles, transepts, and organ chapel. At the west end of the nave will be a gallery for the school children, and at the eastern end vestries for ministers, deacons, and ladies. A tower, surmounted by a spire, will rise at the south-west angle of the building to a height of 150ft. The greatest through length of the church is 87ft., the width across the nave and aisles is 50ft., and across the transepts 66ft. The seats will accommodate 500 adults and 70 children. Internally the nave is divided from the aisles by polished columns of Shap granite, resting on moulded stone bases and supporting carved capitals, from which spring moulded ashlar arches. The transept and organ chamber arches are also of moulded ashlar, and spring from detached cylinders of Robin Hood stone, supported on carved and moulded stone corbels.

Lincoln—The ceremony of laying two memorial corner-stones of the new chapel for the Baptist congregation worshipping in Mint-lane, Lincoln, took place on Thursday week last. The building is being erected by Messrs. Barnes and Wright, builders, from the designs of Messrs. Drury and Mortimer, architects, and has a superficial area of 2,040ft., with 600 sittings. It is designed in the modern development of the Romanesque style, and is arranged in three stages—the lower, containing the two entrance doorways and the triplet window, lighting the centre body of the chapel. The second stage is occupied by a well-marked window, lighting the gallery floor; and the upper stage consists of an arched opening, combined with an arcaded coping to the gable. The interior is proposed to be fitted with open seats, and the conveniences of arrangement for the peculiar rites of the chapel have been much improved. The entrance passages on the ground floor will be paved with Maw and Co.'s geometrical ornamental tiles.

Litlington.—The interesting church in the village of Litlington, Cambridgeshire, is now being restored and renovated, under the supervision of Mr. Vialls, of London. Mr. Gimson, of Royston, is the contractor, the stonework being done by Mr. Whitehead.

Longbridge Hays.—The foundation stone of a new school-church at Longbridge Hays, a hamlet on the slope of the hill near Bradwell Wood, in the parish of Wolstanton, was laid on Saturday week. The building to be erected will seat 180 worshippers and accommodate 125 children for educational purposes. It will be 42ft. by 20ft., with a classroom 16ft. by 14ft. Mr Lewis, of Newcastle, is the architect, and Messrs. Bennett and Cooke, of Burslem, have contracted to do the work.

Newtown.—The foundation stone of a new Primitive Methodist Chapel was laid at Newtown recently. The chapel, 39ft. in length by 30ft. in breadth, will be built of brick, with blue stone plinth, the windows and the door frames being of Bath stone. Mr. Thomas Davies, Welshpool, is the contractor for the brick and mason work, and Mr. Black for the woodwork. The estimated cost of the erection is about £700.

Oldham.—The foundation stone of the new church of S. Andrew, Oldham, was laid on Saturday afternoon, by the Bishop of Manchester. The ground plan of the church, the site of which is at the corner of Middleton-road and Terrace street, comprises a nave 73ft. long, 29ft. wide, and 58ft. high, with lofty arches supporting the clerestory; side aisles 13ft. 10in. wide, and south transept. The chancel, 27ft. by 22ft., adjoins Terrace-street. The style of architecture will be the Early English. Sittings are to be provided for 638 persons, and of these 516 will be free and unappropriated. The estimated cost of the structure is £3,300. The architect is Mr. John Lowe, of Manchester.

Overton.—The chancel of Overton Church has lately been restored. Externally a new gable and cross have taken the place of the old carved ones, with angle buttresses added; internally a new chancel-arch has been erected in place of the old wooden cut arch. The pews and the floors have been renewed, the chancel being paved with Portland stone, with borders and steps of Anglesey marble. The floor within the communion rails is of Sicilian marble, with Anglesey border. Several of the windows have been filled with stained glass by Messrs. Clayton and Bell, of London. The works have been executed by Mr. John Edge, of Overton, from designs by Mr. W. M. Teulon, of London.

Warsash.—On Tuesday week the foundation stone of the church about to be erected on Hook Common, near Warsash, Hants, was laid. The church will be dedicated to S. Mary, and will have accommodation for about 300 persons. Mr. Raphael Brandon, of the Strand, is the architect. The building will be of Swanage and Bath stone, in the Early English style of architecture, and the expense about £3,000. There will be no spire, but a bell-cot at the western gable; there will be porches at the north and south side. Internally the structure will comprise a nave, north and south aisles, organ chamber, chancel, with vestry on the north side, and semi-decagonal apse.

Yafforth.—On Thursday, the 11th inst., the church at Yafforth, in the rectory of Danby Wiske, was consecrated by the Bishop of Ripon. The old church, discovered from an ancient document to have been dedicated to All Saints, was curious and interesting from some antique windows and doors, and from its singular structure. A plan was formed for restoring it, but, owing to the bad condition of the walls and tower, was abandoned in favour of building an entirely new one, for which designs were furnished by Mr. Pritchett. The new church is in the Early English style, with tower, nave, chancel, porch, and vestry. The exterior is of handsome appearance, and the interior neat and commodious. It is embellished by two painted windows, by Clayton & Bell and Lavers & Barraud.

BUILDINGS.

Chester.—On Monday the ceremony of laying the corner stone of the new British School at Chester was performed by the Hon. Norman Grosvenor, M.P. for that city. The new building will be of brick, and of a character combining principally the economy of space with that of outlay, but at the same time, by the introduction of ornamental brickwork, will be a handsome structure. The architect is Mr. T. M. Lockwood, of Chester. The building will consist of two lofty floors, in the lower part of which will be accommodation for about 200 boys, and in the upper storey for about 120 girls and 70 infants. The cost of erection and land will be £1,660.

Guisborough.—Within the last few months the old Town-hall at Guisborough has been enlarged and raised by an additional story being erected, and the building is now one of the finest town-halls in the North Riding. The building as it now stands has three stories, which are appropriated to the various local authorities' offices, On the face of the gable is a coat of arms cut out of Caen stone, the arms being those of the Chaloner family. This coat of arms was taken from the ruins of Guisborough Priory, about the year 1200, and the whole is in a wonderful state of preservation, not a single line of the carving being obliterated by age. One hundred cottages for miners are now in course of erection in the town.

MARLBOROUGH.—SAVERNAKE COTTAGE HOSPITAL.—At a recent committee meeting it was unanimously resolved that the proposed new hospital be built on the hill where the present hospital is situated, but as much nearer Marlborough as the road will permit. It was also unanimously agreed that Mr. G. G. Scott, R.A., should be elected as the architect. The building will be furnished with sixteen beds, which can be easily augmented to twenty at some future time. The cost will be about £3,000, towards which the Marquis and Marchioness of Ailesbury contribute £1,300.

PRESTON.—On Monday last the first brick of the Osbaldeston Charity's Almshouses, Leyland, Preston, was laid by John Eccles, Esq., J.P., the senior trustee. The almshouses, six in number, are intended for the old women of the district, and are to be built of brick, with stone dressings, interspersed with bands of coloured bricks. Each house is one storey in height, well planned, ventilated, and lighted. The builder is Mr. Wm. Alston, and Messrs. Myres, Veevers, and Myres, of Preston, are the architects.

ROCHESTER.—The contractor for the new Corn Exchange at Rochester (Mr. Sollitt) is actively at work in forming the foundations of the building, and as the Castle-gardens come into the possession of the Corporation at Michaelmas it is probable that the double event of laying the foundation stone of the Corn Exchange and taking possession of the gardens will be celebrated by a civic banquet.

SALISBURY.—At the anniversary meeting of the Salisbury Diocesan Church Union Society, held at Salisbury last week, the following sums were voted towards building, restoring, and enlarging parsonage-houses :—Building a new house at Hinton S. Mary, Dorset, £100; rebuilding the parsonage-house at Broad Town, (which had been burnt down), £80; and enlarging the vicarage-house at Burcombe, Wilts, £20.

TAMWORTH.—Complaints have long been made of the accommodation for patients in the infirmary erected when the workhouse was built. The guardians having at length determined to erect an entirely new building on the most approved plan, instructed their surveyor, Mr. N. Joyce, of Stafford, to confer with the Poor-law Board and prepare plans for a suitable building, at a cost not to exceed £1,000. The building was arranged for twenty-eight beds. On the ground floor, in the centre of the building, are a kitchen and sleeping room for the nurse, and on the right and left-hand sides are day rooms for male and female patients respectively. Communicating with the day rooms are sleeping rooms for those patients who are too infirm to ascend the staircases. On the upper floor are three wards—one for males, one for females, and a third for special cases. The most important point to be observed in order to secure perfect ventilation has been obtained by placing the wards and day rooms so that there are windows in opposite sides of each room. The work has been completed by Mr. Joseph H. Clarson, at a cost of £998 14s.

◆

TO CORRESPONDENTS.

◆

[We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

TO OUR READERS.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

Letters relating to advertisements and the ordinary business of the Paper should be addressed to the EDITOR, 31, TAVISTOCK STREET, COVENT GARDEN, W.C.

Advertisements for the current week must reach the office not later than 5 p.m on Thursday.

RECEIVED —Veevers and Myres (thanks), J. P. S., C. C. R., W. H. D., R. A., A. L. D., A. W., J. H., C. and D., S. G., M. C., S. and Co., A. G.

S. H. G.—Shall receive consideration.

F. R. (Hailsham).—See "Intercommunication" in back vols.

◆

Correspondence.

◆

ARCHITECTS' PUPILS.

(*To the Editor of the* BUILDING NEWS.)

SIR,—I am pleased to see the subject which I had thought had almost been unnoticed, renewed by your correspondent in your last week's issue; for it shows at least that I am not the only aggrieved member of that ill-used, though faithful class of individuals, viz., "Architects' Pupils." And I feel sure that the sentiments which I expressed in my previous letter are not simply my sentiments, but those of many of my fellow students who, though they are co-participators in all my grievances, are either content to "grin and bear them," or else have not the moral courage to publish them through your valuable medium. But I, Sir, have no opinion of adopting such a course, and I would say to all such, let them take courage from the opportunity offered them in your article of August 12th, on "Builders *versus* Architects," wherein you say that you wish your columns of correspondence and intercommunication to act as a sort of architectural *plebiscite*, by whose utterance your readers may be both guided to the adoption and encouraged to the adhesion of all that is true and wholesome. It is, then, by agitating and discussing this unwholesome subject that we hope to make it a wholesome one. Your correspondent appears to hint at "trade unionist" principles, but let us hope to effect a reformation rather by appealing to the tender consciences of all such mercenary architects than by scandalizing the profession through introducing the practices of a system which has been so detrimental to its advancement.

The case he gives is by no means a solitary one, I feel sure; and, as he says, no architect can attend properly to the advantage of their future welfare if he has four or five pupils at a time, even supposing he had a practice sufficiently large to keep them all employed. And, Sir, it is needless for me again to hint at the necessity of pupils being initiated into all the branches of the profession, or to dilate upon the misfortunes of unemployed and badly-paid assistants; these are apparent to all, and felt more particularly by the sufferers. I myself have served three years and half of my articles, I hope faithfully, and have at all times endeavoured (to quote the words of my articles as nearly as I can remember them), to obey all my master's lawful commands, which have turned out to be, for the most part, copying specifications and contracts, tracing and tinting drawings, with a smattering of details; walking over some of the buildings without scarcely ever having any of the principles of construction explained voluntarily, and, in fact, gaining no practical or theoretical knowledge but that which I obtain through repeated inquiry and observation; and yet, forsooth, I am supposed to be ripening for the profession, and am cheered with the prospect, after having served another six months, of becoming "passing rich" on perhaps £50 a-year, if I am fortunate enough to obtain a situation. I ask, then, what particular advantage has a pupil over a clerk who gives his services for a short time and begins with a small, but increasing, salary? I still hope, Sir, to see something further upon this matter, and if from no one else, I should like you to deal with it in the same satisfactory manner in which you have dealt with the correspondence on "Builders *versus* Architects," for I feel sure that the influence which your article would exert over the profession would be beneficial and lasting.—I am, &c.

AN INJURED PUPIL

PLAN-DRAWING BUILDERS.

SIR,—I do not quite comprehend the "moral," or the reasoning, at least on this point, of the article by "W. Y." in your current number. But it takes up a side of the question which I thought it needless to notice in my last letter, and on this I wish to say a few words.

No doubt there is plenty of architectural talent outside the profession; no doubt the building trade has its share of such talent, though often untaught and oftener, perhaps, taught wrong. A man who necessarily looks at every detail of a building with a view to what Thackeray called "the pursuit and capture of sixpence" is not likely to do great things either in construction or art. Still, if a man *has* any power for design in him, it matters little where he came from. If he likes to give up building and to cultivate his talent as an architect, no one, as far as I can see, wishes or thinks of hindering him. But if he wants to keep on his own profession and to trench on another as well, he can hardly ask the members of this other to help him. If the public like to support him, let them do so, by all means. But he cannot surely complain if architects cease inviting him to tender. How can he expect them to find him a standing-place while he is trying to cut the ground from under their feet? The only form in which he could honestly apply to them would be something like this :—

"Gentlemen,—I am endeavouring to do away with the necessity for your profession, and have already prepared designs for several works which would otherwise have fallen to your share. I therefore hope that you will assist me as far as possible in my business as a builder, and will let me tender for any buildings with which you may still have to do."

When this modest request is refused, fancy the applicant going away indignant and setting up for an ill-used-man!

One word more. Your correspondent has no sympathy with those who talk of bribery and foul dealing. For my own part, I think the refusal of sympathy should rather be to those who practise them. That they exist in both professions, I, for one, have too much reason to know; and *if* they exist, it is time they were talked about to some purpose. They are cosmopolitan enough, no doubt; so much the worse for us all. Keep them in the dark, and they will spread like a dry rot through society. In our own department, at any rate, let us try what light will do for them. Let every builder expose a bribeable architect, and trust to architects for exposing dishonest builders.—I am, &c. CANDIDE.

ANCIENT CROSS.

SIR,—A correspondent enquires as to the correctness of an inscription shown on a drawing of a cross in Llantwit Major Church.

I am afraid he can place but very little dependence on this sketch. I have compared it with measured drawings which I plotted on the spot last year, as also with some drawings made by a friend at the same time, and have found it to be extremely incorrect.

For instance, Mr. Allen shows the ornament to consist of a flat fillet bounded on both sides by a hollow of the same or even greater width; in reality these fillets (whose interlacements form the ornament) touch one another, having their contiguous edges slightly rounded, so that on a geometrical drawing they should be separated from each other by a single line. The section through them is, in fact, that of a number of flattened beads placed side by side, instead of a fillet and deep hollow. In the head of the cross he has recessed four spandrel pieces of ornament below the surface of the remainder; in reality the whole of the ornament is at one level. The interlacements themselves are, in very many instances, incorrectly drawn.—I am, &c. D. J. EBBETTS.

◆

Intercommunication.

◆

QUESTIONS.

[1918.] STRENGTH OF TIMBER.—I should feel obliged if some of your numerous readers would solve the following for me. On a floor composed of red deal joists 13in. by. 5in., with a breadth of bearing 21ft. and the joists 13in. apart, what weight would they bear per square?—X. P. Z.

[1919.] SMOKY CHIMNEY.—I have a chimney which smokes when the wind is from the S.W. A builder has taken a brick out in the S. W. face, as he says, to cause a draught. It does not prevent the smoking. Is it likely that a hole made in a chimney-flue would improve the draught?—S. R.

[1920.] PROFILE OF MOULDINGS.—Would some reader oblige me by describing the method of obtaining the profile of mouldings, such as cornices, string-courses architraves, &c.?—FRANK CHESSELL.

[1921.] LOAD ON IRON COLUMNS.—Will any one kindly inform me how to calculate the load borne by iron columns under the following conditions? In a shop front 35ft. wide the bressummer is supported at each end by brick piers, connected with the side walls; and in the length by three cast-iron columns. The wall upon the bressummer is one and a half bricks thick, and receives the ends of the floor joists. The roof principals rest upon the front and back walls, and the span is 30ft.—A STUDENT.

[1922.] ARCHITECT'S ASSISTANTS' HOLIDAYS.—I write to ask if you or any of your readers can inform me whether it is usual for a junior assistant, receiving a salary in an architect's office, to have ten or fourteen days' holiday once a year; and whether in so doing it is right for the master to withdraw the wages for the time so occupied, or rather unoccupied.—A CONSTANT READER.

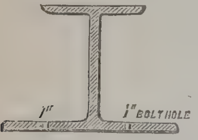
[1923.] PLASTERERS' COMPANY'S PRIZES.—I should be obliged if any correspondent of the BUILDING NEWS could enlighten me as to the results of the above competition, as I have seen no account of it.—STUDENT.

[1924.] ASPHALTING.—I should be glad if some of your readers would inform me what is the simplest and best mode of asphalting, say, for a large playground, promenade, or garden drives and walks.—GEORGE K. NORTH.

[1925.] SEWAGE IRRIGATION.—As I see in your columns continual accounts of the application of this principle, allow me to ask what is the proper number of acres of land to take for a given population? Does this depend upon the nature of the soil, or is the average independent of this consideration? This is a very important point, considering the great difficulty there is in obtaining land for the purposes of sewage irrigation.—Inquirer.

[1926.] CARRYING A STREAM OVER A RAILWAY.—What would be the best plan to adopt under the following circumstances? I have to carry a stream over the cutting of a railway, 16ft. deep. The volume of water would be fully provided for by an ordinary 3ft. culvert. The slopes of the cutting are 1½ to 1, and pillars might be put in the "six foot" between the two lines of rails. A sketch, with dimensions, would greatly oblige me.—Contractor.

[1927.] PILE DRIVING.—In driving cast-iron piles to a depth of nearly 20ft. into the bed of a river, a great number have broken about a foot from the top. Can any of your correspondents suggest a remedy? The piles were driven with an ordinary engine and monkey, the average fall being about 9ft.—Balk.



[1928.] TESTING CAST-IRON.—Having to superintend the manufacture of some cast-iron girders for a large city warehouse, I am desirous of ascertaining what would be a fair test to employ without tasking too much the strength of the material. The section of the girder is shown in the accompanying drawing, and the span is 19ft. 6in. Would it be best to test them with a small load, and carefully take the deflection, or to select one or two and load them until they broke? I am afraid that in cast-iron the deflection would be too small to notice.—Founder.

[1929.] MODELLING.—Can any of your readers inform me what is mixed with the pipe-clay for modelling to bind and make it harder when dry?—F. L. E. P.

[1930.] ANTS.—Could any person kindly tell me the most effectual way of exterminating hosts of small brown ants with which a new house is infested, and whether they are bred in the house, or find their way in from the garden?—A Subscriber.

REPLIES.

[1909.] HYDROSTATICS.—If your correspondent would inform your readers of what material the cone in question is composed the problem might be solved, but as it is it cannot, as clearly the depth to which the cone will sink will depend altogether upon the ratio of its specific gravity to that of the fluid it is immersed in.—A. C.

[1910.] LIABILITY.—It is easy to see how this case would be determined by a jury. B fails in his contract to A, insomuch as his plans cannot be executed for considerably more than £500, which he (B) knew beforehand was the maximum that A would spend. If the stables could not be built for £500 it was the duty of B to tell A so, but not to prepare plans which could not be carried out for nearly double that amount. As B engaged C to take out the quantities, he of course must pay him for his time and services, as C has nothing whatever to do with any arrangements between A and B. From the statement, one would be inclined to think that there was collusion between B and C.—Lex.

[1912.] FACTORY CHIMNEYS.—I think by "longitudinal band" "Student" must mean "circular band," as the former would signify a band extending from top to bottom of the chimney shaft. Circular bands are of great value, and should always be used. Iron cramps are the proper things to use for the overhanging stones or corbels. A very neat way of finishing a chimney is to place a cast-iron top on it, set in the best cement.—L. L. A.

◆

LEGAL INTELLIGENCE.

Libel Case at Ramsgate.—On Saturday Mr. Edward Welby Pugin, the well-known architect, was charged at the Ramsgate Police-court with writing and publishing a false and defamatory libel concerning Mr. John Barnet Hodgson, the Ramsgate Postmaster. Mr. Straight, barrister, conducted the prosecution, and Mr. Pennistoun represented the defendant. The court was densely crowded, and the proceedings were watched with great interest. The libel complained of was contained in a letter addressed by Mr. Pugin to Mr. Sankey, a member of a firm of solicitors extensively practising in the county of Kent, who had been acting on Mr. Hodgson's behalf in an action impending between him and the defendant, in which certain questions of account were involved. In this letter exceedingly strong epithets are employed. Two other letters of the defendant of a similar character were referred to. The bench sent the case for trial, and Mr. Pugin was bound over in his own recognisances to appear.

◆

LAND AND BUILDING SOCIETIES.

Equitable Permanent Land and Building Society.—The second annual meeting of the shareholders in the Equitable Permanent Land, Building, and Investment Society was held at the City Terminus Hotel on Wednesday, when the report was adopted. A dividend of 5 per cent. per annum was declared, with a bonus of 2½ per cent. being equal to 10 per cent. for the second year. It was stated that on the 1st of January a deposit bank was started in connection with the society. This has succeeded beyond the expectations of the directors, and promised to become a source of considerable profit to the shareholders.

Tunbridge Wells Permanent Mutual Benefit Building Society.—On Monday last the annual general meeting of the members was held. The annual report was submitted, and the usual bonus of 20s. on every share, which should become realized during the current year, was declared. The chairman said that owing to the loss of one of their most energetic members and largest subscribers, the balance-sheet did not present so prosperous an appearance as that of last year, but in spite of that loss, he was glad to say that the usual bonus would be paid. The report was then adopted.

WATER SUPPLY AND SANITARY MATTERS.

Barnard Castle.—The Secretary of State's order for an inquiry into the water supply of Barnard Castle, referred to in our last, will commence on Tuesday, September 6, before Mr. Robert Morgan.

Bristol.—The foul state of the river at Bristol is exciting attention, and the local *Times* urges the complete drainage of the city, by carrying out the sewage to the opening of the Bristol Channel, at whatever cost:—"We are spending hundreds of thousands on splendid new streets, or in enlarging old ones (says the *Times*); but a more spacious and commanding city, with a death-rate increasing against us, is but a whited sepulchre upon a large scale—fair without, and certainly not fair within. Before stately streets and straight thoroughfares, we should look to the sanitary condition of the city. Both economy and philanthropy call for it. Bradford and Reading obtained powers during the last session to improve their sewers and utilize their sewage; and even Dublin, the capital of a country whose people are generally supposed not to be quite so particular in these matters, is bestirring itself to carry its drainage beyond the banks of the Liffey. A large district of Bristol is inhabited by visitors and others, who, free to select their place of abode, have made this picturesque and in many respects most desirable locality their residence; if we are to keep them and attract them, we must not allow the Registrar-General's return to read against us month after month: especially when, as we believe, a great deal of the death-rate (that part of it certainly by which we exceed other places) may be removed by prompt and thorough attention to the matter of drainage."

Cheltenham.—The formal inauguration of the Sewage Farm and works at Cheltenham has taken place. The scheme was officially sanctioned, after an inquiry before Mr. Rawlinson, C.E. A tract of land, more than 140 acres in extent, at Hayden's Elm, was purchased, and to this site the main sewers from the tanks are extended for the sewage to be utilized thereon; and there is also a large district available for irrigation both between the tanks and the farm, and a little beyond the latter. At its outlet on the land the sewage is discharged at a point about 130ft. above the level of the sea. The sewer from the Chelt tank to the farm is about three miles in length, having a fall of 8ft. in a mile; that from Hatherley tank is nearly 1¾ mile long, and has a fall of 6ft. in a mile. From the land itself there is an outlet sewer for the purified water leading into the Chelt, and a direct outfall also into the Hatherley brook, which abuts immediately upon the land. The estate has been to a certain extent laid out for the reception of the sewage. Hitherto the cost of the work has been more than £6,000, exclusive of £10,400 paid for the works. The contractors were Messrs. Abell, of Worcester, and Messrs. Gibbs & Canning, of Tamworth.

Coventry.—The Corporation of Coventry lately granted to Dr. Anderson the use of the sewage works at Whitley for the purpose of testing, by experiments, his plan for the treatment of sewage. Since then a sub-committee of the Town Council has been appointed to overlook some of the operations, with the view of investigating the results said to be obtained. Experiments, extending over two days, have been conducted by Dr. Anderson in the presence of many members of the Corporation,—a tank containing 100,000 gallons of sewage being on both occasions subjected to the process of precipitation, which is the characteristic feature of Dr. Anderson's system. Sulphate of alumina—prepared by mixing two parts of clay with one part of sulphuric acid—and common lime were thrown into the tank in certain proportions, and the whole mass, having been properly mixed, was allowed to rest till the more solid parts had been deposited at the bottom of the tank. The water was then run off, and so far as appearances went it was scarcely distinguishable from pure water. Samples of the effluent water obtained by Dr. Anderson's process, and of ordinary sewage water that has not been so treated, have been sent for analysis, and the opinion of a competent authority will be taken as to the value of the solid manure, which it is proposed to sell in a dry state. Dr. Anderson believes that its value will at least cover the working expenses, and upon this, and the purity of the effluent water, the worth of the system of course depends.

Sudbury.—It is understood that the Secretary of State has accepted the tender of Mr. Thomas Tilley, of 2, Bond-court, Walbrook, for the Sudbury Waterworks.

The New Sanitary Act.—Last week the new sanitary act passed this session was printed. It contains a provision that all hospitals in the metropolis be placed within the district of every one of the nuisance authorities in the metropolis.

Wells.—The first step towards the realization of an efficient water supply for the town of Wells, Somersetshire, has been taken. Mr. Ward, C.E., has inspected the springs at Holes Ash, near Wells, and has reported most favourably on their suitability in every respect. It is intended, with the sanction of Sir C. Taylor (on whose lands the springs rise), to bring the water to the town and erect new waterworks, which will be done by a limited liability company.

◆

STATUES, MEMORIALS, ETC.

Hull.—A marble statue of Sir William de la Pole, merchant, who was the first mayor of the borough of Kingston-upon-Hull (temp. Edward III.), has been given to the Hull corporation by Mr. Alderman Robert Jameson, and placed on the grand staircase of the town-hall. It is the work of Mr. W. D. Keyworth, jun., the sculptor of the statue of Andrew Marvell, which is one of the chief ornaments of the same building. Mr. Sheriff Leatham has expressed his intention of presenting another statue to the town-hall.

Monument to Dr. Lee in Greyfriars Church, Edinburgh.—Workmen have for some days been engaged in placing in this church the sculptures by Mr. Hutchison, R.S.A., in memory of the late Rev. Dr. Lee. The monument in the church is twofold. A beautifully chiselled medallion in high relief, of the lamented divine, occupies a niche on the right hand side of the wall, going towards the pulpit, and a figure, representing the Angel of the Resurrection, has been placed on the opposite side. The medallion and the figure are both of the finest marble. The medallion rests upon a marble bracket, on which are the words "Robert Lee, D.D.;" and upon a tablet of the same material, which supports the figure of the angel, there is the inscription—"In memory of Robert Lee, D.D., minister of the Greyfriars' Church. Born November, 1804. Died 14th March, 1868."

Raith (N.B.).—A monument, in the form of a mediæval altar tomb, to the memory of the late Colonel Ferguson, has just been erected on the Castle Hill, in the Raith grounds, overlooking the picturesque lake. It is sculptured in Carrara marble, and was designed and executed by Mr. John Hutchison, R.S.A. The sides and ends of the monument are enriched with quatrefoil panels. Extending over the top and in relief is an Early English cross, with the sacred monogram I.H.S. The base and cornice are richly moulded, and the whole marble rests on a massive plinth in one block of polished red granite.

◆

STAINED GLASS.

Pittenweem.—The last of three stained glass windows has just been inserted in the south-west side of S. John's Episcopal Chapel, Pittenweem. The chapel recently underwent extensive alterations by the erection of an additional wing to the building, and by the re arrangement of the whole interior of the place. The insertion of these windows has now made the chapel the most unique of its kind in the east of Fife. The east or chancel window has three large figures, the centre figure representing the Ascension of our Saviour, with the figure of S. John and S. Andrew on each side. The south window represents the Crucifixion and Resurrection. This window is erected by surviving relatives. The south west window represents our Saviour bearing the Cross, and the Three Women at the sepulchre.

◆

Our Office Table.

The New Torquay Harbour.—This work, which has been in hand for upwards of three years past, is a massive masonry pier or breakwater, and is run out from the rocks, known as Beacon Point, for a distance of about 700ft. in a westerly direction, and is now completed. From this an elbow, about 150ft. in length, is being carried out, turning to the north-west. This pier, or breakwater, is the principal portion of the work. At the base it is about 70ft. thick, narrowing to about 56ft. at the top, the height from the foundation to the top of the parapet being 44ft. It is composed of two stout walls. Outside the pier is an embankment of stones, thrown out to a distance of something like 100ft., which gradually slopes upwards to within 12ft. of the top of the parapet. The area enclosed by the new pier is about 10 acres. The depth of water at the pier-head at high tide is 32ft., and at low tide 18ft. Along the new quay is erected a substantial and commodious range of store buildings, with the offices for the harbour-masters adjoining, the whole presenting a handsome façade towards the sea. A tramway is laid close to the edges of the pier and quay, for the use of steam cranes and trucks in loading and unloading vessels. The cost of the works is upwards of £60,000.

The Pyramids.—Col. Sir Henry James, in a recent lecture on the pyramids of Egypt, stated that in the king's chamber, inside the pyramid, some of the stones were 30ft. long. These stones, weighing some ninety tons, were not found in Egypt at all, but were brought down the Nile a distance of 500 miles, and then placed in their present position, 100ft. above the level of the ground. With regard to their finish, these Syenite stones are the very hardest known, and yet they are so exquisitely polished, and built in (to form a casing for the king's chamber) with such superior skill, that the finest sheet of tissue paper could not be inserted between two of the stones, and this after a lapse of 4,000 years. Such workmanship would excite the wonder and admiration of the world, even in this age of science and improvement.

New Graving-Dock at East Greenwich.—An addition has lately been made to the dock accommodation of the port of London by the construction of a large graving-dock by Messrs. Lewis and Stockwell, at their shipbuilding works at Blackwall Point, East Greenwich. This dock is adapted to repairing vessels of the largest class, being 400ft. long and 68ft. wide (60ft. wide at entrance), having a depth of water at average spring tides of 21ft.

Value of Land at Hampstead.—From recent sales of villa sites effected by Messrs. Edwin Fox and Bousfield on the Mount-grove Estate, we find that land which, until recently, has only been regarded as valuable for grazing and garden purposes, has realized at the rate of nearly £3,000 per acre, thus showing the enormous increase in the value of land in this locality now that it is opened up by railway communication.

The London, Chatham, and Dover Railway.—The award by the Marquis of Salisbury and Lord Cairns in the matter of the London, Chatham, and Dover Railway was issued on Saturday. In the discharge of liabilities priority is given to to the Common Fund Debentures and Stock, Victoria Station Improvement Debentures and Stock, certain Debentures on the General Undertaking, and the Western Extension Debentures and Stock : all these, with arrears of interest, are to be converted into an "Arbitration Debenture Stock," bearing interest at 4½ per cent., and of the amount of £5,000,000. Two other stocks—the "Arbitration Preference," £4,394,289, also bearing 4½ per cent. interest; and an "Arbitration Ordinary," £7,743,405, to rank after the preference—are also created, and into one or other denomination, partially or wholly, every claim on the company is to be converted.

Fatal Accident from Defective House planning.—Mr. Bedford has held an inquest at the S. Anne's Vestry, Dean-street, Soho, on the body of Mary Pond, aged 62, who died from a fall down stairs. The room in which she and her husband lived was situate in such proximity to the stairs that one stepped from the room down the first stair, there being, in fact, no landing. The deceased, who was blind, had groped her way across the room, with the intention of sitting down in an arm-chair, but, unfortunately, turned her back to the door, which was wide open, and fell backwards to the bottom of the flight of stairs, striking her head in a fearful manner, and inflicting severe injuries, from the effect of which she died. The jury strongly condemned the designer and builder of such a house, and returned a verdict of "Accidental death."

The Steam Roller.—"An Islington Surveyor" writes to the *Times* :—"Referring to a portion of a paragraph of yesterday's issue, wherein you express a hope that steam road-rolling will be adopted in the metropolis, and 'leave parochial authorities without any pretext for the continuance of a system that has long been a scandal,' you are probably not aware that for almost every day during the whole of this year one of Aveling and Porter's 13-ton steam road-rollers has been at work in this parish, and is now purchased by the Vestry."

Liverpool House-Painters' Soiree and Ball.—The house-painters of Liverpool, on Tuesday evening, celebrated the inauguration of a benevolent fund in connection with their trade society by holding a soiree, concert, and ball, in Queen Anne's Hall, Queen Anne-street. The gathering was a large one, and all who were present seemed greatly to enjoy the varied entertainments of the evening. After a very substantial tea, addresses were given by Mr. J. Cox, president of the society (who occupied the chair), and Mr. Macdonald, honorary secretary of the Manchester Alliance. The chairman stated that in Liverpool there were between 1,700 and 2,000 connected with their trade, and as not one-fourth of these were members of the society, the new association had been started for the express purpose of inducing the workmen to become active supporters of it. Mr. Macdonald referred at length to the immense advantages which had been conferred by trades' unions, and detailed the success which had attended the existence of the Alliance in Manchester. An excellent programme of music was the next feature of the entertainment, and the ball which followed was kept up with unflagging spirit until an early hour.

Street-Door Letter-Boxes.—A circular has been issued from the General Post Office calling attention to the additional postal facilities about to be afforded to the public in the shape of post cards, printed matter, newspapers, &c., and suggesting that an increased rapidity in the delivery of letters would be obtained by the general adoption of street-door letter-boxes. This plan is already extensively used in many localities, and it is hoped that those householders who have not hitherto adopted the plan will now do so in anticipation of the approaching postal changes. The expense is stated to be about 6s. 6d., including fixing the box and making the aperture in the door.

New Market for Santiago, Chili.—Messrs. Laidlaw and Son, of the Barrowfield Ironworks, Glasgow, are just finishing an immense piece of ironwork which is to be erected in Santiago, Chili, as a market-place. It is constructed chiefly of cast-iron, and forms a square of nearly 150ft on each side. Exclusive of the gates—sixty-eight in number—which were sent off some time ago, the ironwork will weigh about 1,000 tons.

Chips.

Next year's meeting of the British Medical Association will be held at Plymouth.

The directors of the Ulster Railway Company have decided to erect a new wrought-iron superstructure for the railway bridge over the river Bann, at Portadown.

Mr. J. H. Collison, Oldham, has been appointed borough surveyor for Durham, in the room of Mr. William Ground, resigned.

The Taunton Local Board of Health has instructed the surveyor to prepare a plan, specification, and estimate for the proposed widening of North Town bridge.

The chancel of the old parish church of Ilchester, Somerset, has been restored by the rector.

An exhibition of works of art and industry was opened on Wednesday week at Great Horton, near Bradford, by Lord Frederick Cavendish, M.P.

The foundation stone of a new Orange hall was laid on Saturday week in Lisburn by the Dean of Ross.

A new organ (by Foster & Andrews) has recently been erected in the parish church of Newport, Isle of Wight.

On Tuesday week the Marquis of Bute opened the Cardiff Fine Art and Industrial Exhibition.

The Queen, on Wednesday week, before leaving for the north, conferred the honour of knighthood on Mr. Edward Smirke.

A project has been started for constructing a railway from Castle Eden to Middlesborough, by which the coal owners of that part of Durham will have access to the Middlesborough docks.

The Ripon Fine Arts' Exhibition closed on Monday week, after having remained open since last Easter Monday.

The foundation stone of a new church at Holywell was laid by the Marchioness of Westminster on the 15th inst.

A new candle factory for Messrs. Brimley, Whibley and Co., at New Chesterton, Cambridge, is now in course of erection by Messrs. Howes and Clark.

Llangedwyn Church will be re-opened on Thursday, September 8, by the Lord Bishop of S. Asaph.

It is stated that the Right Hon. W. Cowper Temple is about to erect a new boys' national school at Romsey, Hants, the present building being very incommodious and dilapidated.

Thetford Church has been re-opened after restoration.

Mr. Baker, of North Hill, Colchester, has just executed a new reredos for Nayland church.

The foundation stone of a new church at the Hook, Southampton, was laid on Tuesday week by Mrs. Hornby. The edifice will be built and endowed by Mr. A. Hornby, of the Hook.

On Saturday week Colonel Hutchinson, of the Board of Trade, accompanied by Captain Hall, of the Admiralty, held a sitting at Dundee, for the purpose of taking evidence in reference to the proposal to build the Tay bridge 80ft. high instead of 100ft.

The erection of the new church of S. Augustine, South Kensington, is begun. The building will be somewhat imposing in the character of its architecture, and will be completed, it is expected, in May next. Of the whole cost, £5000 has yet to be raised.

At the last meeting of the Hedingham Highway Board, a letter was read from the Wickhambrook Highway Board suggesting that Mr. Salter, of Sudbury, should be employed, at the joint expense of the two boards, to prepare plans and specifications for a proposed new bridge over the river between Cavendish and Pentlow. The Board, after considerable discussion decided to employ their own surveyor, leaving the Wickhambrook board to employ their own architect.

Timber Trade Review.

There has not been much demand for wood during the past week, and probably consumers prefer waiting until prices are more settled. There, however, is little or no variation from last week's quotations. Freights are quoted Archangel to London, Hull, or Grimsby, 80s. ; Cronstadt to London, &c., 50s. ; Riga to London, &c., 60s. ; Quebec to London, 75s. dry deals, timber, 29s. ; Miramichi to London, &c., 72s. 6d.

It is very seldom that an opportunity is afforded of recording the prices of mahogany planks, boards, &c., when sold by auction in large quantities. The price in the log is to be had very frequently, but the mahogany trade being a separate branch of the timber trade, few large parcels of planks and boards are submitted for public competition. Such an opportunity presented itself on Tuesday last, and with the following results, which will be highly interesting to builders and other consumers.

Observe that all the prices quoted when for 1in. and upwards and for planks and flitches, are per superficial foot of 1in., all above being reduced to 1in. and sold as such. All under 1in. are quoted at a price per foot super. of the thickness given :—

	Inches thick.	d.		d.
Cuba mahogany	3½	4½	to	6¼
Do.	3	6½	,,	8¼
Do	5½	9½		
Do.	5	6¼		
Do.	4	4½	,,	9½
Do.	2¼	6½	,,	9¼
Do.	2½	4½	,,	9½
Do.	2	4¾	,,	8¼
Do.	1¾	3¾	,,	8
Do.	1½	5¼	,,	9½
Do.	1¼	3	,,	6¼
Do.	¾	4¾	,,	8
Do. (fine)	¾	7½	,,	10½
Do.	1	6¼	,,	9
Do.	⅝	4	,,	5½
Do.	½	2¾	,,	8½
Do.	planks	4¼	,,	8¼
Do. (fine)	do.	12¼	,,	12½
Do. (mottled)	do.	10½		
Do.	flitches	8¼	,,	10¼
Do. (fine)	do.	8¼	,,	11
Do. (curl)	do.	9		
Do. (dining-table)		9¼	,,	15
Cedar	1¼	4½		
Do.	1	4½	,,	5¾
Do.	¾	3	,,	3½
Honduras mahogany	2	4½	,,	5
Do.	1¾	4½		
Do.	1½	5½		
Do.	1	4¼	,,	8½
Do (fine)	1	10		
Do.	1¼	5½	,,	6¾
Do.	3½	7¼	,,	8½
Do.	3	5½	,,	8½
Do.	¾	3¾	,,	4¾
Do.	planks	4	,,	5¼
Do. (fine)	do.	10¼		
Japanese oak	do.	2¼		
Mexican mahogany	3½	4¾		
Do.	3¼	4½		
Do.	3	4½	,,	7
Do.	2½	4¼	,,	6½
Do.	2	6½		
Do.	1½	4¾	,,	5
Do.	1	5	,,	9¼
Do.	flitches	10		
Do.	planks	4	,,	5¼
Do.	¾	4½	,,	6¼
Oak	1	4¼		
Do.	⅝	1¾		
Do.	½	1	,,	1¾
Do.	plank	2¾		
Purple wood, 3s. 0d. to 5s. 1d. cube				
Spanish mahogany	1	6	,,	7¾
Do.	¾	8½		
Do. (fine)	planks	9¼		
Do. (dining-table)		19	,,	30
Tobasco mahogany	1½	5		
Do.	1	5		
Do. (fine)	⅝	5½		
Walnut, English	1	1¾		
Do.	¾	1¾		
Do.	½	1¼		
Do.	planks	3	,,	4½
Do. (black)	3¼	5		
Do.	1½	4¼		
Do.	1	5		
Do. Italian	planks	6¾		

The French Atlantic cable reports that extensive fires are raging in the woods around Ottawa, that large quantities of timber have been destroyed, and the city itself been in danger.

LATEST PRICES OF MATERIALS USED IN CONSTRUCTION.

Timber.

Teak ....load	£13	0	13	10
Quebec, red pine	3	15	4	15
,, yellow pine	4	0	4	15
St. John N.B. yellow	0	0	0	0
Quebec Oak, white	6	0	6	10
,, birch	3	15	5	0
,, elm	4	5	5	5
Dantzic oak	5	0	6	10
,, fir	3	0	4	10
Memel fir	3	0	4	0
Riga	3	0	4	0
Swedish	2	10	3	0
Masts, Quebec red pine	3	15	5	5
,, yellow pine	3	15	5	5
Lathwood, Dantzic, fm	3	15	5	10
,, St. Petersburg	5	10	6	10
Deals, pr C., 12 ft. by 3 by 9 in.,				
Quebec, white spruce	12	10	18	0
St. John, white spruce	12	10	14	0
Yellow pine, per reduced C.				
Canada, 1st quality	16	10	18	0
2nd do.	12	0	12	10
Archangel, yellow	11	10	13	0
St. Petersburg, yel.	11	10	13	0

Finland	£7	0	£8	0
Memel	7	0	9	0
Gothenburg, yellow	9	0	11	0
,, white	8	0	9	0
Gefle, yellow	10	5	12	10
Soderham	8	10	12	0
Christiania, per C., 12 ft. by 3 by 9 in. yellow	10	0	12	10
Flooring boards, per sq. of 1in., first yel	7	6	10	6
First white	7	0	9	6
Second qualities	6	6	7	6
PUMICE STONE pr ton	6	0	8	0
OILS, &c.				
Seal, pale....per tun	37	0	0	0
Sperm body	84	0	0	0
Cod	39	0	0	0
Whale, Sth. Sea, pale	37	0	0	0
Olive, Gallipoli	50	0	0	0
Cocoanut, Cochin, ton	42	10	43	10
Palm, fine	39	0	0	0
Linseed	29	6	0	0
Rapeseed, Eng. pale	44	0	0	0
Cottonseed	28	0	34	0

Metals.

Lead —

Pig, Foreign	per ton	£18	15	0	£19	5	0
,, English W.B.	do	20	5	0	20	15	0
,, Lead Co.	do	20	5	0	20	15	0
,, Other brands	do	19	10	0	20	0	0
Sheet Milled	do	20	10	0	21	0	0
Shot, Patent	do	22	0	0	23	0	0
Red or Minium	do	19	15	0	20	10	0
Litharge, W.B.	do	0	0	0	0	0	0
White Dry	do	30	0	0	0	0	0
,, ground in oil	do	0	0	0	0	0	0

Copper :—

British—Cake and Ingot	per ton	£70	0	0	71	0	0
Best Selected	do	72	0	0	76	0	0
Sheet	do	74	0	0	76	0	0
Bottoms	do	78	0	0	0	0	0
Australian	do	69	0	0	72	0	0
Spanish Cake	do	0	0	0	0	0	0
Chili Bars	cash	63	0	0	63	10	0
,, refined ingot		69	0	0	72	0	0
Metal Sheathing and Rods	per lb.	0	0	6½	0	0	6¾

Trade News

WAGES MOVEMENT.

Leigh.—The joiners of Leigh are out on strike. At an aggregate meeting of the carpenters and joiners, held on the 18th June, it was resolved to ask for an advance of 2s. per week, which would make their wages 28s. The advance was to take place on the first Saturday in August; but as the masters have unanimously declined to accede to the request, the whole of the joiners have struck work.

TENDERS.

Brighton.—For alterations and additional works at Queen-square Baptist chapel, Brighton. Mr. John Hill, architect. Quantities supplied.

Lockyer	£790
Barnes (accepted)	663
W. Chapell	640

Cardiff.—For the erection of seventy-two cottages and six shops, and for forming streets, for the Cardiff Workmen's Cottage Company (Limited). Mr. T. Waring, Cardiff, architect.

	Cottages	Shops.	Street Works.
Dawson	£9331 7 0	£2033 15 0	£349 2 0
Jay	9022 0 0	1854 0 0	319 0 0
Shepton*	8595 0 0	1920 0 0	378 0 0

* Accepted.

City.—For new building, corner of the Poultry and Queen Victoria-street, for Mr. James Wheeler. Architects, Messrs. John & John Belcher. Quantities by Messrs. Franklin and Andrews.

Lawrence & Sons	£20130
Little	19863
Higgs	19625
Perry Bros.	19000
Brass	18622
Coleman	18620
Mansfield, Price & Co.	18528
Gammon & Sons	18480
Conder	18460
Rider & Sons	18033
Henshaw	17605
Myers & Sons	17449
Jackson & Shaw	16552

Horsham.—For the erection of a villa residence, conservatory, and stabling, at North Parade, Horsham, for Mr. A. Agate. Mr. Edward Burston, architect.

Sturdy	£5127 0 0
Putney	4530 0 0
Terry	4453 17 6
Bushby	4349 0 0
Shearburn	4169 0 0
Perigoe	4133 18 6
Burbidge	4043 0 0
Chappell	3894 0 0
Nightingale	3812 0 0
Peskett & Taylor	3555 0 0
Potter	3471 5 0
Sharp Brothers	3446 0 0
Smith	3284 9 0
Greenfield & Sons	3239 10 0

London.—For the Devonshire-square church and residence. Mr. Thomss Chatfeild Clarke, architect.

Ennor	£8128
Myers & Sons	8084
Perry	8023
Macey	8022
Ashby & Homer	7869
Hill & Sons	7825
Ashby & Sons	7800
Axford & Co.	7780
Dove Brothers	7765
Henshaw	7735
Scrivener & White	7735
Conder	7659
Hill, Keddell, & Waldram	7620
Brass	7592
Higgs	7520

London.—For three houses in the Abbey-road, S. John's Wood. Mr. W. Todd, architect.

Ebbs & Sons	£3479
Simpson & Son	3365
R. Hackworth & Son	3360
Phillips & Sons	3334
Longmire & Burge	3277
Higgs	3243

New Brompton.—For the erection of a house and stables, High-street, New Brompton, Kent. J. H. Andrews, architect, Rochester.

	House.	Stables.	Total.
Foyer			£1400 0
Wilkins & Son	£1100	£230	1330 0
Gates	1073	198	1271 0
Hartrick			1165 0
Baxter (accepted)			995 10
Reeves			775 0

Rainham.—For the erection of a detached cottage at Rainham, Kent. J. H. Andrews, architect, Rochester.

Miller	£483
Sampson	460
Seager	449

Stratford.—For timber skeleton and tower, for Messrs. Dunn & Squires. Architects, Messrs. John & John Belcher.

Lawrence & Sons	£325
Coleman	145
Browne & Robinson	139

Surrey.—For a flour mill at Caterham Junction, for Mr. Henry Walder. Mr. Felix William Lankston, architect.

Brown	£1620
Bull	970
Sherwood	930
Pollard	915
Lose	864
Parson & Tilling	834
Paskett & Taylor	784

Tewkesbury.—For the erection of a farmhouse, near Tewkesbury. Mr. James Allsop, architect, Worcester.

Collins & Cullis	£735
Espley	725
Mills	701
Mathews	645

Walthamstow.—For house for Mr. Wragg. Architects, Messrs. John & John Belcher.

Fox	£1059
Deavin	883
Turner	850
Reed	811
Forrest	788
George	767
Perry Bros. (withdrawn)	411

BATH STONE OF BEST QUALITY.

Randell, Saunders, and Company, Limited. Quarrymen and Stone Merchants, Bath. List of Prices at the Quarries and Depots; also cost for Transit to any part of the United Kingdom, furnished on application.

BATH STONE OFFICE,
Corsham, Wilts.
[Advt.]

CONTRACTS OPEN FOR BUILDING ESTIMATES.

St. Mary Abbott's, Kensington, Sept. 7.—For the erection of a new infirmary and other buildings adjoining their workhouse. Ruben Green, Clerk to the Guardians, No. 1, Devonshire-terrace, Wright's-lane, Kensington.

Croydon Local Board of Health Waterworks, Aug. 30.—For the construction and erection of a condensing pumping engine. R. J. Cheesewright, Clerk, Town Hall, Croydon.

Croydon Local Board of Health Waterworks, Aug. 30.—For the manufacture and delivery at Croydon of cast-iron socket pipes. R. J. Cheesewright, Clerk, Town Hall, Croydon.

Sheffield, Aug. 31.—For the erection of a villa residence, in Clarkhouse-road. Hill and Swann, architects, Times Buildings, Sheffield.

Rawmarsh Local Board, Aug. 29.—For the supply of the following cast-iron common socket pipes:—2,700 yards of 10in.; 1,850 yards of 6in.; 8,200 yards of 4in.; 800 yards of 3in.; 1,250 yards of 2in., together with about 5½ tons of bend and irregular pipes of various sizes in connection with the above, comprising Contract No. 1. Also for the supply of the various sluice cocks, hydrants, and other water fittings, together with special castings, comprising Contract No. 2. And for the laying and fixing of the foregoing pipes and fittings, comprising Contract No. 3. Contract No. 4—For the supply of 80 cast-iron lamp-posts, of strong pattern, 10ft. high, and weighing about 3 cwt. each. To be fitted complete with proper lamp irons and strong copper lantern, ready for glazing. F. L. Harrop, Clerk, Local Board Office, Rawmarsh.

Metropolitan Board of Works, Sept. 22.—For constructing, completing, and maintaining in repair for twelve calendar months after completion, a storm outlet sewer, penstock chamber, with two penstocks therein, flap chamber and tide flaps, and other works in connection therewith, on the premises of the Deptford Pumping Station. John Pollard, Clerk of the Board, Spring Gardens.

Oxfordshire, Aug. 29.—For building a new chapel, at Fewcot, five miles from Bicester, in the county of Oxfordshire. Rev. C. D. Marsham, Caversfield, near Bicester.

Oswestry, Sept. 24.—For a Congregational church, on the site adjoining the old chapel. W. H. Spaull, architect, Albion Chambers, Oswestry.

Tadcaster Union Workhouse, Sept. 10.—For the erection of this workhouse. J. A. Bromet, Clerk to the Guardians, Tadcaster.

St. Pancras, Sept. 5.—For providing and fixing iron railings, with iron coping and brickwork, and concrete foundation, round an inclosure in course of formation at Lismore-circus, Gospel Oak Fields. Chas. Worrell, Chief Clerk, St. Pancras Works Office, 10, Edward-street, N.W.

Keighley, Sept. 5.—Contract A.—For the masons' and bricklayers', carpenters' and joiners', painters', plasterers', slaters', and plumbers' and glaziers' work required in the erection of stable, coach-house, coachman's cottage, &c., on Skipton-road, for Thos. H. Cockcroft, M.D. Thos. Elliott, architect, Devonshire-buildings, Skipton-road, Keighley.

The Barton, &c., District Local Board, Sept. 17.—For levelling, paving, sewering, and channelling Clarendon-road, Eccles, being about 320 yards in length; also for paving and completing King-street, Eccles, about 220 yards in length. George Trenbath, Clerk, Board-room, Patricroft.

Ulster Railway Company, Sept. 7.—For the supply and erection of a new wrought-iron superstructure for the railway bridge over the river Bann at Portadown. Foster Coates, Secretary, Belfast.

Cleethorpes Sewer Authority, Lincolnshire, Sept. 6.—For the supplying and laying about five miles of socket pipe sewers, varying from 18in. to 9in. indiameter; also the necessary junctions, gullies, ventilators, tanks, and outfall works, &c. Rev. W. P. Jones Secretary, Great Grimsby.

Bedford Local Board, Aug. 29.—For the supply of about 200 tons of 15in. cast-iron socket pipes, to be delivered at one of the railway stations in Bedford. Theed. Wm. Pearse, Clerk to the Board, Bedford.

Kingston-on-Thames, Aug. 29.—For the supply of iron fencing, consisting of the following materials, viz.:—12 main posts and 60 intermediate posts of cast-iron, and about 600 lineal feet of wrought-iron rail, 1⅞in. diameter. Walter M. Wilkinson, Town Clerk, Kingston-on-Thames.

Leeds, Sept. 19.—For the whole or any portion of the works required in the erection of Holy Trinity Church, Armley Hall. Adams and Kelley, architects, 18, Park-row, Leeds.

BANKRUPTS.

(TO SURRENDER IN THE COUNTRY).

Stephen and William Dancy, Brighton, builders, Sept. 10.—John Wade, Bury St. Edmunds, brass founder, Sept. 5.—William Speakman, Salford, builder, Sept. 5.

PUBLIC EXAMINATION.—Act, 1869.

Sept. 8, G. Nelson, Sheffield, plumber.

DIVIDEND MEETINGS.

Sept. 5, W. Beck, Newbold Vendow, Leicester, bricklayer.—Sept. 5, W. Evatt, Ibstock, Leicestershire, builder.

PARTNERSHIPS DISSOLVED.

Tyley and Sons, Bristol, marble merchants.—Gritten and Son, Parliament-street, architects and surveyors.—Emery and Co., Pudding-lane, carpenters.—Kinsey and Co. Nottingham, engineers.—J. and W. Wallwork, Chorley, painters.

Price 4s., Post Free, 4s. 4d.

Laxton's Builders' Price Book,

For Architects, Engineers, Builders, Contractors, Surveyors, and all the Building Trades.

For fully fifty years this work has been considered the chief authority on matters connected with the Building Trades. Its use, even on one occasion, will probably repay the cost of the book ten times over, and instances will continually occur in which the consultation of its pages will effect a saving of many pounds.

London: MORGAN and CHASE, 38, Ludgate-hill.
And may be ordered of any bookseller in the kingdom.

PERSPECTIVES, &c, in PEN and INK or COLOURED.—See photographs from drawings in the Building News of September 10 to October 15, 1869, and many others.—M., 12, Alfred-place, Thurloe-square, South Kensington, London.

Just Published. price 1d.

A TREATISE ON THE UTILIZATION OF TOWN SEWAGE AND REFUSE FROM WORKS, Illustrated with Plans and Sections. By J. Duthie, Peel Terrace, Preston. By Book Post thirteen stamps.

The author has been awarded for his plan the Silver Medal of the Royal North Lancashire Agricultural Society, 1867 and 1870.

THE NEW ELEMENTS OF HAND-RAILING, in concise Problems, calculated to bring this most useful science within the reach of every capacity. By Robert Riddell. Illustrated with accurate plates, 4to., cloth, pp. 126 and 40 plates, 21s. Trübner's "New Scientific Catalogue," post free, 2d.

London: TRUBNER & CO., Paternoster-row.

ARCHITECTURAL PHOTOGRAPHS & BOOKS.

A Set of 8 PHOTOGRAPHS (mounted in cardboard), from the original drawings of the PRIZE DESIGN of the MANCHESTER TOWN HALL competition. Size of the photograph 12 by 10. Price £2 2s

A LITHOGRAPH of the HOTEL DE VILLE AT HAMBURGH (the prize design), by G. G. SCOTT, Esq., Architect. £1 1s.

A PHOTOGRAPH (mounted on cardboard) of the ASSIZE COURTS AT MANCHESTER by A. WATERHOUSE, Esq. Architect. Size of the photograph 26 by 21. £1 1s.

The above, being very suggestive designs, would be useful to all first-clas offices.

EXECUTED EXAMPLES OF CHURCHES, CHAPELS, MANSIONS, and VILLAS, to be completed in Five Divisions, at 10s. 6d. each. The first and second divisions only just out.

These examples are by different architects, and they contain the actual cost of each building, and the materials used, together with the ground and chamber plans.

CHURCHES and CHAPELS erected by G BIDLAKE, Esq., Architect, Wolverhampton, with the plans and the actual cost of each erection, together with the best arrangements of the seats, both in the gallery and the ground floor. 12s. 6d.

This little book is quite a favourite with the profession on account of the well-known ability of the architect in designing and carrying out the different Nonconformist Chapels and Schools Houses, &c., in different parts of England.

The above Photographs and Books can be had from the Publisher, S. BIRBECK, Bookseller, 10, Church-street, Lozells-road, Birmingham.

HANDBOOKS FOR TOURISTS.

AN INTRODUCTION to the STUDY of GOTHIC ARCHITECTURE. By J. H. Parker, M.A., F.S.A. Third Edition, Revised and Enlarged, with 180 Illustrations and a Glossarial Index. Fcap. 8vo., cloth extra, 5s.

A CONCISE GLOSSARY of TERMS used in GRECIAN, ROMAN, ITALIAN, and GOTHIC ARCHITECTURE. By J. H. Parker, M.A., F.S.A. New Edition, revised. Fcap. 8vo., with nearly 500 illustrations, ornamental cloth, 7s. 6d.

"For the knapsack of the traveller, or the table of the amateur, not sufficiently interested to need the completer work, it is an invaluable little volume."—Builder.

THE ENGLISH ARCHÆOLOGIST'S HANDBOOK. By Henry Godwin, F.S.A. Post 8vo., cloth, 7s. 6d.

"The antiquary will find it inestimable as a book of reference; the student will have in it a valuable assistant; and by a judicious use of it, the sham antiquary may avoid any great mistakes when his cousin the vicar displays to him the wonders of his parish church. . . . . We imagine that no archæologist will henceforth consider his knapsack packed until this little handbook is put in."—Athenæum.

Oxford, and 377, Strand, London: JAMES PARKER and Co.

IMPROVED DWELLINGS FOR THE PEOPLE.

THE ARTIZANS', LABOURERS', AND GENERAL DWELLINGS' COMPANY
(Limited).

Capital £250,000. Shares £10. £1 paid per Share.
President—The Dean of WESTMINSTER.

Arbitrators.	Local Council.
Right Hon. Earl Shaftesbury.	Thos. Bazley, Esq., M.P.
Right Hon. Earl Lichfield.	Jacob Bright, Esq., M.P.
Lord Elcho, M.P.	John Cheetham, Esq., M.P.
&c., &c., &c.	W. R. Callender, Jun., Esq., M.P.

W. Swindlehurst, Manager and Secretary.

The Company is especially formed to erect improved workmen's dwellings on the co-operative principle. No beershop or tavern to be erected on the Company's property. Profits realized by workmen employed on the buildings 40 per cent. Deposits received at 5 per cent. Prospectuses on application, enclosing postage stamp. Office, 1, Great College-street (opposite the House of Lords), Westminster, London.

THE BUILDING NEWS.

LONDON, FRIDAY, SEPTEMBER 2, 1870.

IRON.

FEARFULLY, all over Europe, the question of iron and steel in the market is just now prevalent: not for purposes of peace or uses of domestic industry, but for the destruction of mankind. We have heard of the flint, and the bronze, and the iron ages; but no age was ever more iron, or rather, more gun-metal, than this. The science which was destined to make us better has made us worse; and we are fighting with the very elements that were intended to confer mercy, not less than strength, upon civilization. Still, taking facts as they are, we must admit the enormous part which war plays in the drama of the day, whether for humane or for cruel objects. Half the science of Europe appears now to be turned towards metallurgy. Since Agricola wrote his "De Re Metallica," there never has been so much attention devoted to the subject. We were always, as a nation, making experiments about it. We began with wire-works; we went on to needles; we sold swords in Toledo and daggers in Milan; and thus we carried on an eccentric commerce until the value of great guns was known. Twenty millions of tons of English manufacture, in iron and steel, were exported from Great Britain in the year 1864. These details tell, of course, upon the enterprise of such parts of the country as Wales, and the South Staffordshire, Yorkshire, Durham, and the Scottish mining districts. And the demand for this product is incessantly increasing. It accompanies every improvement in tools; ship-building cannot be advanced without it; watchmaking can make no progress without it; it is the material of the mariner's compass, of the fashionable crinoline, of the surgeon's lancet: and now, in these terrible days of war, it is the arm and defence of nations. We are all heating and hammering this metal until it almost seems that our country had become a region of reverberatory furnaces. Since the discovery of the black-band ironstone in Scotland, and the invention of the hot blast, we have, indeed, grown to be less dependent upon foreign sources; but every practical man is aware how we have, at times, relied upon Dutch cast-iron and upon the crude fabrics of Sieven, in Germany. Those transactions are affairs of the past, no doubt. The new Clyde Iron Works have superseded their traditions. We have found immense riches underlying the Scottish midland counties, and there can be no limit to the ingenuity of our manufacturers. Nevertheless, a serious doubt exists as to whether, in this matter, we are holding our ground, and not buying from Belgium what we cannot appropriate for our own service, should the necessity be evoked. It seems untimely, however, to put such a question. Industry and War lie far apart, happily, one from another. We may exist in an age of iron, yet we may not, perforce, desire that iron shall be turned to relentless purposes. It was long thought to be our servant; we have converted it, however—or, at any rate, our neighbours have—into cannon and the mastery of Europe; it is a commentary upon civilization, but a commentary still; and yet to this moment, while we, and the French, and the Germans forge their huge ordnance, Indian artificers tell us, as they have told us for centuries, that our cutlers, so far as science and art in the iron and steel fabric are concerned, must remain in despair. Well, we would ask our mechanics whether it be true or not that this manufacture has deteriorated? We put no faith in the stories about the Sheffield artisans burying their raw material for several weeks in water, or of the razors sharpened from the iron-shod piles of old London Bridge; but nothing can be more certain than that, in our race after perfection, we are trying, in some confusion, a number of experiments; adding carbon to malleable iron, partially decarbonizing cast-iron, and adding malleable to cast, in order to produce steel. The celebrated Catalan process, "in which the ore is reduced by a charcoal fire, and the resulting metallic is afterwards carbonised on the hearth by contact with an incandescent charcoal," has been tried, and not with success. The results are not uniform. They are partly iron and partly steel. The work produced is deformed and weakened by blisters; the excess of carbon in the admixture is not safely got rid of; the refining is imperfect; and the regulating of temperature in the casting can scarcely be commanded. This, according to many opinions, accounts for the waste of so much German artillery during the war now unhappily raging. Half the patents of recent times, registered with a view to obviating these difficulties, have been discarded. German artillerists will tell you that the "purified fluid metal," free from silicon, phosphorus, and sulphur, and puddled to perfection, would be a triumph. It was not. The result was "burnt iron." Still the invention triumphed over all previous processes, and was a step in the right way, but very exhausting to the apparatus employed in the manufacture, and very wasteful to the metal itself. We have learned a great deal in the science of steel-making since Mr. Bessemer resolved to persevere. We have gained in lightness and strength; in cheapness; in the facility of constructing large-spanned girder bridges; in the plating of ships; in building commercial and passenger steam-boats; in the laying down of rails; and in the generally tensile strength of iron employed in engines and machinery. No doubt various causes for these improvements may be assigned. We have overcome a good many perils of a practical character, arising from sheer ignorance of the nature and capacities of iron. We have begun, at length, to distinguish between the qualities of our various ores; but, after all, are we thinking at present of iron trophies built for peace? Unhappily, not. We are dwelling upon the iron industry of the Messrs. Krupp, in Germany; we are turning our thoughts to the ease with which steel may be turned to the destruction of mankind. And in what contempt are the ancient inventions held! Captain Jerningham, before the Select Committee of the House of Commons, only a little while ago, declared that our "adamantine lips" were worth, in a battle, not more than so much crockery. A fresh element entered into the manufacture; cannon-foundries became laboratories; military engineers were bidden to remember the disturbance of crystalline forces; they were told to weld their guns to absolute soundness in every part; they were prohibited, for the future, from hiding flaws by ingenious strokes of the hammer; in fact, they learned that a new age of iron had commenced, and would necessitate certain new qualifications in the adaptation of it. So France, so Prussia, so Spain, so the United States, and in her turn, England, was persuaded with the idea, and the science of iron occupies a forward position in the intellectual view of modern Europe, fortunately not altogether in its adaptation as a means of warfare. The Messrs. Krupp calculate that their works, formidable as are the monsters turned forth, represent not one tithe of the metal employed for peaceful purposes. They, Germans though they are, and interested in the most terrible conflict of modern times, hate war, as those who practically know about war must always hate it most, although they supply its apparatus. They deplore it as the worst crime which can be perpetrated by humanity; they pity the people and the governments that purchase in their direful markets. Nevertheless, they urge, and with truth, iron is the grand material of the day. It has not only superseded wood in many instances as the substance of beams and roofs; it makes the train, it builds the bridge, it has risen to a prodigious importance from the days of Basan to those of Birmingham—in plain truth, with powder, it is the power of war. And a power of peace also. It supplies the machinery of our travel, of our domestic convenience, of our trade, and, from an old horseshoe to a broken kettle, every scrap of it has a price. Now, all this is thoroughly well known, and it is perfectly well known also that England possesses, in unfailing abundance and variety, the treasure of a natural iron store. Unless she wilfully throws away her advantages, her superiority in this respect can never be imperilled. Our materials are excellent, our machinery is unsurpassed, our mining population is industrious, bold, and hardy; we are in charge of a manufacture national in the best sense of the term, and yet foreigners are boasting that they can outvie us. We are far from believing it. Nevertheless, a prophecy or a vaunt is often the presage of a fact. The greater truth, however, should overcloud the more distant possibility. The superiority of this metal over all others, writes a wise mechanician, consists in the vast number of purposes to which it can be advantageously applied, and the various modifications of which it is susceptible in the process of manufacture. There is, indeed, no other metal which could be worked up as well to serve equally for a needle and for a shot for a 98-pounder gun; as a surgeon's lancet, and as a 10-ton Nasmyth hammer; as the spring of a watch the size of a shilling, and the hull of a leviathan steamship; and which is alike indispensable in the construction of a pair of scissors and an electric telegraph, a steel pen and a railroad, a mariner's compass and a tubular bridge. The iron machines of our manufactures are driven by the steam engines of Watt, and their products are distributed over iron railroads by the iron locomotives of Stephenson. We have iron roofs, iron churches, iron houses, iron lighthouses, iron palaces, iron hotels. Such is the British boast; the German prediction is, that, the war vanishing, Germany will take a great share of this industry from our hands. We have no fear; their rivalry will encourage our skill. Only let us always be sure that confidence in our own skill does not tempt us to forget the emulation of our neighbours.

◆

ANOTHER FAILURE OF COMPETITIVE EXAMINATIONS.

IT is no secret that two successive attempts to obtain "the coming man," in the person of a competent surveyor to act for Government, under Captain Galton, have signally failed. This fact, in itself, is less strange than that expectations of any other result should have been entertained. That men of experience and ability fit for such a position and its responsibilities should subject themselves to the character of examination proposed, and submit to tests as to their being able to speak and write English grammatically, as well as to their special professional knowledge and skill, is not credible for an instant, and consequently none but a few architects' assistants were found to offer their cheeks to the smiter. Some such, of course, would be found eager to secure a higher salary and social standing than they have been able to attain in the somewhat arduous course of life which they have chosen, and in which they have had keenly to compete with their brethren for the few openings it presents. These, however, are men who have, to a certain extent, if not failed, yet not succeeded, in the battle of life, in a path which, though not very remunerative, yet, like most others, has prizes amply sufficient for the comparatively limited number of able and energetic men who enter the lists to strive for them. The Department must, therefore, abandon this method of selection if they would secure the services of a competent surveyor to undertake the responsible posts they are endeavouring to create. We dismiss the question as to the wisdom of such a desire on their part. That is to be argued upon the broad principle of centralization or non-centralization, and may safely be left to experience to decide. Government has apparently resolved upon trying the experiment, and the public may fairly expect to be the ultimate gainers thereby, even though the experience they seek has to be gleaned from failures. The jealousy of some members of the architectural profession has been aroused by what they consider to be an attempt to supersede themselves. But it hardly needed the disavowal on the part of Government (which has, however, been given) that any such intention existed to relieve them from anxiety on that score; for even if the present Government does seek to dispense with employing architects, their doing so may be looked upon as a mere temporary and frivolous, though inconvenient and disagreeable freak. The sure, though we must own slow, progress in the refinement and intelligence of the nation will not long suffer public buildings to be erected by other than the most able hands, and therefore the salaried surveyors are not likely to be called upon to execute work for which in the nature of things they cannot be fitted. What is required by the present Government is no more than what we believe will always be a practical want of the nation,—persons whose special business it will be to look after the condition of public buildings, either those erected or in course of erection; clerks of works, in fact, who will have to advise as to the necessity of employing an architect in the former case, and to act under the orders of one in the latter. There is no doubt some danger of a wish on their part to step beyond their proper province, and also that they might occasionally be called upon to do so in an unwise spirit of economy on the part of their employers. Yet, as we have already pointed out, we think such aberrations from the right course will soon be detected and avoided. Why, then, has the system of competitive examination failed in this case as well as in that we referred to in the last number of our journal? And how should future failures be avoided if the Government would obtain the surveyors they have asked for? These two pertinent questions we propose to deal with upon the present occasion.

Competitive examinations appear to us admirably suited on the whole to winnow out the best material from the class of students fresh from their studies at school or college, though here, as is well known, they occasionally fail, and the well-crammed mediocrities often are placed by them higher than far more able and practical men who have been less well-drilled or less diligent. Time, however, is pretty sure to reverse these conditions, and this evil is cast into the shade by the evident good effects of the system at this stage in the life of men. When, however, the same system is sought to be carried out in the choice of men of maturer age, to select candidates for positions needing men of ability and experience. it seems as if it must necessarily fail, as it will certainly not be the foremost who will come forward to compete for them, particularly if any rigid examinations have to be gone through for the purpose. It is notorious that men of middle age, who have long since left off the study for the actual practice of their professions, would not be able to compete against younger men in points of mere book-learning; but is it the latter in preference to the former that the Government need for their work? 'Prentice hands had far better be allowed to experiment in *corpore vili* than upon important buildings at the expense of the public. Now we happen to know thoroughly capable and well trained men who would gladly accept the post and terms offered by Government for their assistant surveyors, who have declined to put themselves forward on the very grounds stated above, and we also know for certain that out of the two batches of candidates who did present themselves not one equally competent man was to be found.

In answer to the second question—how should future failures be avoided if the Government would obtain the surveyor they have asked for?—we would point to the system that has been judiciously adopted by the Metropolitan Board of Works with regard to the district surveyors appointed by them. This system has now been so long and so successfully carried out that Government could not do better than follow it. The examination for fit and proper persons has been delegated to the Royal Institute of Architects, and is held by them several times in the course of each year. Candidates come up at the age and period in the course of their career to which we have pointed out that such competition examinations are suitable, and they then receive a certificate of competency, which they can produce at any future occasion, when an appointment is vacant. A man who has once proved himself a proficient in professional theory and practice cannot do otherwise than improve by experience as time rolls on, and may safely be considered to have done so without being again subjected to a test which in his case would amount to an indignity.

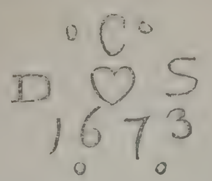
But it might be asked, how is such a system to be set on foot so as to enable Government now to select such men as they want? In our opinion the best way would be to offer their first appointments to the men who now hold the certificate of the Board of Examiners of the Institute, for the duties demanded of them cannot differ widely from those required from the district surveyors of the Metropolitan Board of Works. The Government would, doubtless, reply that they sought the advice of the Institute on the subject, and were repulsed by that body, such having been to a certain extent the fact.

All, however, that they did do was to ask the Institute to make known that certain appointments were to be offered to candidates who would subject themselves to the examinations we have deprecated. When we say deprecated, we mean, however, only for the reasons above given; the examinations themselves were, we know, thoroughly well organised and conducted, the only fault was that they tended to keep away the right class of candidates, and that the actual candidates broke down completely under them. Had the Institute been asked to advise as to the method to be pursued, we doubt not that they would have given such advice as we have endeavoured to sketch out, and we believe that such, or a similar course, is the only one that is likely to prove successful.

SUNDRY BUILDINGS IN THE ISLE OF THANET.

MANY architects and architectural students, as well as the public generally, will, in consequence of the grievous war now being waged upon the Continent, have their attention not unprofitably directed homewards, and may find, without having far to seek it, much food for reflection. Along the line of the London, Chatham, and Dover Railway—from Rochester, with its stately memorial of the Roman invasion and its mediæval cathedral, to the modern and somewhat plebeian watering-places of Margate and Ramsgate—almost at every station may be seen a really stately church or other architectural work, and here and there between them humbler, but hardly less precious, relics of old and good domestic work. As we have felt ourselves unable to resist the temptation of exploring several of the bills of fare thus held out to us, we propose not selfishly to keep the feast all to ourselves, but to give our readers such a taste of them as we hope may induce them to follow our example. Having made little aristocratic Broadstairs, as it is called, our head-quarters, in preference to its larger and more popular neighbouring towns, we shall commence our gleanings in its vicinity. Although the ill-regulated enterprise of speculative builders bids fair to rob it soon of some of its special charms, the walk down its High-street and round its picturesque little bay has not yet been greatly injured, and retains much of the effects of an ancient Kentish village. The architect, indeed, cannot but grieve over the paucity of the remains of its once thoroughly picturesque and admirable domestic architecture, and will have to wend his way to the neighbouring village of Reading Street if he would see several of the old flint and brick gabled cottages together. Still even in Broadstairs, are several excellent examples of the kind to be found, modestly retiring from the general street line, and shrouded by the shrubs in the little gardens in front of them. What church, if any, other than S. Peter's, which is about a mile off, the town originally possessed, has unfortunately been superseded by a hideous modern one, the very memory of which causes a shudder, and a faint hope that a friendly storm might put an end to its melancholy existence. A parsonage is rising close to it, which, being from the designs of Mr. Tarver, the architect, will add no little to the embellishment of the town, its position being picturesque, and its grouping and outline promising to be so. We could have wished that the local and suitable type of work which we are referring to had been selected instead of the somewhat commonplace work that has been adopted; for we doubt that much, if any, additional cost, would have been the result; still we are altogether grateful for the example given to the local builders as it is. Some ruins of a small chapel, dedicated to our Lady of Broadstairs, still exist near the picturesque timber-built pier, which is said to date from the time of Henry VIII., but probably has had every part of the structure renewed, like the well-preserved carriage, which sometimes had new wheels put to its old body, and at others a new body to its old wheels. A veritable piece of antiquity, however, is an archway of an old portal under which one passes to get to the pier, and it tells of less quiet days than our own, when defensive walls were needed to ward off privateers; at which time the chapel before referred to, and an image of the Virgin kept within it, were held in such veneration that ships passing it used to lower their top-sails to salute it. About half a mile from Broadstairs, upon a fine site near the Foreland, belonging to the Archbishop of Canterbury, and at the back of his residence, Mr. Seddon, the architect, is now building for Mrs. Tait a large orphanage to contain sixty orphans and ten ladies, which will be a conspicuous feature from the town and whole surrounding neighbourhood, as, from the height of the ground, it will be visible from both Margate and Ramsgate. Its plan is the shape of the letter **I**, with the entrance in one wing and the chapel in the other. It is built with the local materials of flint and brickwork, with dressings of Doulting stone. Being upon a promontory it will command extensive sea views almost on all sides, and would certainly appear a most healthy and pleasant residence for the inmates in fine weather, but they will get the full benefit, such as it may be, of all storms, to resist which it is being built in a most substantial manner with thick and hollow walls. We will now enumerate the remains of the old domestic work within the town itself, of which we hope to be able to give some illustrations hereafter.

The best example undoubtedly is a block of two houses, called Milton-place, at the bottom of the High-street, bearing on a table of brickwork the inscription



It is two stories high, divided by a string-course of three courses of brick, and the upper story is divided into five spaces by pilasters of one brick in width, and there is a frieze under the eaves which has a piquant effect, and which is composed simply of a row of two headers placed diagonally, the spandrels and wall surface generally being of split flint-work. The doorways, unfortunately, are of more recent insertion, and only fragments of the original windows remain, modern sashes having replaced them throughout, except it may be that the panel now bearing the name Milton-place having been originally one of them. The gables are of good outline and proportion, and a stack of chimneys at one end is well treated, but as a drawing will give a far better idea of them than any description, we shall request our readers to wait until we can give them one, as we hope soon to be able to do. The bricks used are somewhat over 9in. long by 2½in. thick, with wide mortar joints, and much of the delicacy of the effect is due to this, and would be lost with the thicker bricks now generally used.

A little higher up the street, on the same side, is a gable end with plain straight verges. The face of the gable is richly diapered with brickwork and flints, and has the original small windows in it, and a string-course at the springing three bricks high, but with flints in a row in place of the central course of bricks. There is a very good gable and chimney; the latter, however, mutilated. A little higher up a sort of flat segmental pediment crosses the chimney stack, the bricks of which are moulded.

In several other cottages about the heads of the doorways seem alone preserved, and are useful as supplying the missing links in the otherwise more perfect examples we have described. It is necessary to study with care several specimens to be able to restore any to their original condition.

There are some other but less valuable fragments in Albion-street and other parts of the town, but they are all so far surpassed by those in S. Peter's and Reading Street and elsewhere that we need not extend our researches at Broadstairs further. Nor with respect to such ancient domestic work will it be of much use to mention the few which modern progress has allowed to exist at Margate. Still there are a few in the older part of the town, and one block of timber-built cottages, with little projecting bay windows, struck us particularly in a recent walk through that town, and certainly caused us to retrace our steps for the purpose of sketching and measuring it.

◆

THEORY OF THE ARTS.

(*Continued from page* 131.)

THE REVIVAL; MODERN ART; ANALYSIS.

FROM the commencement of the fifteenth century art gradually underwent a change of a very marked character. The æsthetic action, as I have said, was somewhat impeded by the other more provisional movements of the age, especially the industrial and scientific, which began simultaneously to effect a revolution in the thought and feeling of the period. Hence we find æsthetic genius wanting in that social direction and expression which it had before possessed. It must be again remembered the æsthetic faculties are intermediate between the moral and intellectual; and the fine arts, having to express these attributes of society, adapt themselves especially to a homogeneous state of society. Fetichism and polytheism, as we have seen, were both favourable, and so was that transitional stage of monotheism which we have just sketched. But the harmonious balance of thought and feeling was soon disturbed. The scholastic system had accomplished its mission; a new order of things commenced under the guidance of reason and actual observation, under which the prolonged compromise between religious and secular thought was impossible.

Again, it was impossible for the æsthetic movement to keep pace with the industrial or scientific movements, and rapid strides were being made by the former of these.

A glance at European society is sufficient.* It was disturbed politically, intellectually, and morally at this epoch. The feudal character was gradually yielding everywhere. Nationalities were springing up in France, Germany, Italy, and other countries; there was a progressive centralisation going on, an organisation of forces, but an apparent confusion prevailed. Ancient elements and forms begin to disappear and regular forms of government take their place. The old feudal system failed; security and progress are looked for. Ecclesiastical power everywhere yields to the secular temporal power. The rise of the Classical school of *literati* and free-thinkers throughout Europe created perhaps the most profound revolution as regards art. Dante, Petrarch, and Boccaccio were really the pioneers of restored Greek taste in art as in literature. "The golden morning" of Italian literature and art had hardly dawned upon England, however, till about a century later. During the latter part of the Plantagenet epoch, the development of the English Constitution and Parliament, commercial enterprise, and industry, gave little leisure for the cultivation of the taste or the elaboration of a new style of art. Even under the sway of the Plantagenets manufactures made progress. Thus woollen manufactures, an extensive source of commerce, had an impetus as early as the fourteenth century, and Edward III., "the father of English commerce," encouraged Flanders in that commodity and invited Flemish weavers into England. Commerce, indeed, after liberty, became the leading feature, and the object of Parliament. During the same reign we find statutes framed for the protection of artisans and others. Again, maritime enterprise and discovery tended much to foster foreign views and taste under the Tudor dynasty; while the invention of printing, and the growth of a rich literature, adorned by a host of names, from Chaucer to Spenser, Shakespeare, and Bacon, aided to disturb national æsthetic action and to promote foreign ideas and art; for it must be remembered that during the Elizabethan epoch an affected style, in which Classical quotation and idiom were prevalent, became fashionable, and certainly hindered the development of a national style. The coarse manners and barbarous ideas of the Middle Ages were everywhere discountenanced by men of education; but, on the whole, pedantry and unreality were substituted for indigenous feeling. The progress of completion of the Reformation during the latter dynasty was itself a powerful means of retarding national art by the reactionary measures of reformers, and this combined to forward the secularisation of art more than anything else. On the whole, the progress of material improvements and scientific discovery was entirely out of all pace with the moral and æsthetic condition whose basis was thus revolutionised, and whose action was impeded, if not destroyed.

Out of such a chaos, the forms and elements of ancient art formed the basis of a new art system, in which selection and adaptation became the chief principle of development. It is hardly necessary to say indiscriminate *selection*, or the reproduction of features without the function of the second process, became the characteristic object. Functional or organical development, if I may so term it, no longer existed in art. There was not even a scientific method of appropriating the forms of ancient art, though Vignola, Palladio, and other Italian artists, adopted the academic canons laid down by Vitruvius centuries before, which were little better than set rules for composing mechanically the *ordonnances* of Greek and Roman Temples.

But the leading feature of this epoch was the separation between the religious and secular powers. All the other movements of the age contributed to this result. The developed state of domestic architecture during the Elizabethan epoch in this country alone, and the comparative neglect into which ecclesiastical art fell, is sufficiently indicative of the change. Again, the improvements in the material comforts and mechanical arts, such as the introduction of chimneys and window glass, gave an impulse to secular architecture. Æsthetic progress was also checked, and bore no proportion to that of the material and mechanical arts.

Thus the course of ancient art was diverted, or rather stopped. It is enough here that we briefly analyse the character of the revival. Its history, and the great names of the revivalists, every student of art history is well acquainted with. The sixteenth century may be regarded as the crisis in art history. It was the turning point from art conception to art reproduction. It was not a return to the spirit but to the mere letter of Classic art. The earlier phase of the fifteenth century, marked by the early Italian and Continental revivalists, shows an attempt to amalgamate the peculiarities of Classic and Gothic art—an infusion of Classical feeling into Gothic detail is rather the distinguishing element than an indiscriminate re-employment of Classic features. Mr. Fergusson, in his handbook of "Modern Architecture," distinguishes clearly the earlier phase, or Renaissance, from the later phase of the Italian revival, as practised in England during the seventeenth and eighteenth centuries by Inigo Jones, Wren, and their followers. The first period was marked chiefly by the works of the Mediæval-Italian artists, which show a return to Classic simplicity without the slavish introduction of Classic details. Such were the works of Brunelleschi, Michelozzo, L. B. Alberti, Sansovino, &c. The second phase is more prominently illustrated in England.

Our own late Gothic was much predisposed for the engrafting of Italian details; thus the arch was subordinate to the horizontal members, which became as strongly marked as the vertical features, and assumed the profile of Classic mouldings. The high-pitched Gothic roof was substituted by a very flat pitch in the post-Gothic period, and various other indications show a tendency of the Tudor Pointed to merge into a semi-classic style, as the late Elizabethan. In France, and elsewhere on the Continent, the renaissant tendency, assimilated itself more readily to the Gothic, and produced a more homogeneous style, while in those countries which were most Italian in feeling the change was earlier, and the mixture of elements still more homogeneous. Ecclesiastical Gothic architecture terminated in England with Henry VII.'s reign, and his own chapel bears evidences of the renaissance of Classical features and principles.

Throughout the Renaissance period, the process of art-design was reversed. Under the Gothic, and in all preceding systems of art, principles of general structural design preceded or formed the basis of the details. Not so under the Renaissance. The general principles of late Gothic were retained, but the details were borrowed. Classic forms, and least essential details, were first introduced, and ascended into the more structural and larger features. This process gradually went on till the whole system of the revival became a complete sham or disguise under the Anglo or pseudo-Greek age of the last century. Of the styles of Italian—of which there are three schools, the Florentine, Roman, and Venetian—the first and last seem to possess the greatest pliancy for palatial and domestic buildings. The Florentine has a Grecian refinement and sublimity of breadth highly expressive of civil or domestic purposes; and the development it has attained in this country by the late Sir C. Barry show it to be well adapted for secular wants and civic purposes. Being astylar, and of a fenestral character, it possesses an adaptability for such requirements not found in the other styles. The Roman and Venetian schools have each distinctive features, though both differ from the Florentine in being columnar. The English school chiefly belongs to these. In the Roman school there is perhaps more variety in forms than the Florentine, but the majestic size of the order renders it less pliant than the more astylar treatment of the other schools. To the Venetian school belong the larger share of the English examples which were founded upon it. Inigo Jones, Wren, and Vanbrugh were the leaders of this school in England. One peculiar advantage in the Venetian manner is the greater variety admissible in plan and grouping, which renders it more suitable for country buildings and for general requirements. It has a poetic complexity and outline, as displayed by Vanbrugh, eminently favourable to scenic and landscape effect. G. H. G.

---

* See Guizot's "Hist. of Civilisation." Hallam's "Middle Ages."

(*To be continued.*)

◆

TESTS AND QUALITIES OF BUILDING STONE.

THE following extract from the report of Mr. James Hall to the New York Capitol Commission—contains much that is of interest and value :—

In the selection of building stones for the exterior walls of a building, *colour*, *texture* and *durability* are objects of the first importance; and all of these ought to be combined to render the structure perfect. Too little attention has been given to the subject of building stone; and while, on the other hand, we are largely using a brown stone which gives a sombre, cheerless aspect to the structure, the opposite extreme has been sought in the white marble, or that which is more nearly white in colour. In contrast with these we have the red glaring colour of brick; and it is only partially that this offensive aspect is palliated by painting in neutral tints. In a few eastern cities and towns we find the light grey granites now used in preference to the brown freestone, the white marble, or the dark granite, which have been much in use in past years.

No one can fail to experience the sensation of relief afforded by the structures of light-coloured granites in the city of Boston, or those of the buff or dove-coloured limestone in the city of Chicago, or of the light grey freestone of many buildings in Cleveland and other places, and of the buff-coloured brick of Milwaukee. In these cases we have not the excessive reflection of light, or the glare which comes from white buildings, whether of marble or of painted brick; nor the sombre, cheerless expression of the darker stone, caused by its great absorption of light. It is only necessary to consider the effects produced by the structures of these different materials upon one's own sensations in order to determine what are the most agreeable tints, or those which please the eye and produce a cheerful impression upon the mind.

In the majority of structures, the necessities of locality, cheapness, or other causes compel the erection of structures from materials most accessible; but these considerations are not imperative in the case of an important public building.

In many cases, where the rock is homogeneous throughout and the colour uniform and satisfactory, it is only to be inquired whether the colouring material is such as will produce decay or disintegration of the particles. When the general colour is produced by the aggregation of different materials of distinct colouration, the character of each one is to be considered, and its effect upon the whole; and it is important to have such material comparatively fine-grained, and the different parts as uniformly mingled together as possible. As a general rule, it is only in the darker stones that the colouring matter has any tendency to disintegrate the mass.

In the selection of building stones, the simple presentation of a sample is not enough. The rock in place should be examined in the outset; for in its natural out-crops it has been exposed to the action of the weather, in all its influences, for many thousands of years. One of the principles taught in elementary geology is that the soft and decomposing rocks appear in low rounded or flattened exposures, or entirely covered by the soil of their own *debris*, forming no conspicuous feature in the country; while, on the contrary, the harder rocks stand out in relief, producing marked and distinguishing features in the landscape. It not unfrequently happens that the geologist, having familiarized himself with the succession and character of the rocks of a particular locality or neighbourhood, by seizing the features and character of the prominent beds, is able to trace them in succession along the escarpment or mountain range as far as the eye can reach, and to approach them from any distant point with assurance that he has not been deceived.

The strata which make these features in the landscape are the ever-enduring rocks, which have withstood the action of the atmosphere through a period a thousand times longer than any structure of human origin. One cannot doubt that, if properly placed in any artificial structure, they would still withstand the action of the elements. These escarpments, in their natural situation, may be coarse, rough, and forbidding, more or less dilapidated, or unequally dilapidated from the effects of time; but as they there present themselves, we shall be able to see their future in any structure exposed to the same influences.

It is true, however, that no artificial structure or position will ever subject the stone to the same degree of weathering influence to which it is exposed in its natural position, but the same changes in degree will supervene upon any freshly-exposed surfaces. In its natural position the bed has been encased in ice, washed by currents, saturated with rains and melting snows, frozen and thawed, and exposed to the extreme of summer heat without mitigation. The rock which has withstood these influences is quite equal to withstand the exposures of a few centuries in an artificial structure. Yet there are occasionally modifying influences and conditions which have sometimes subdued the permanence of a durable stone, and given preference to others less durable. It therefore becomes necessary to carefully examine all these conditions, and to determine, not only from the rock in place, but also from its physical constitution, whether it will meet the requirements of the structures proposed.

It not unfrequently happens, in working a quarry, that layers are reached which have not been exposed to the weather, and it is then necessary to test the strength and power of endurance of the stone. This may be done by repeated exposure to freezing and thawing, by testing the strength or power of resistance to pressure, &c. The exposure to freezing and thawing will not only determine its power of resisting the action of the weather, but will determine also whether such foreign ingredients as iron pyrites may exist in the mass. Chemical analysis may be resorted to, for the purpose of comparison with specimens of known composition and durability; but chemical analysis alone cannot determine, without other testing experiments, the strength or power of endurance of the stone.

In some countries, and in certain localities in our own country, the evidence obtained from ancient structures is available in determining the durability of the stone which has been used. Yet it would seem that this information has been of little avail in many places, where the rebuilding of edifices is repeated every century. Experience in many cases does not teach the lesson anticipated; and when a dilapidated structure is pointed out, the argument is made that "these stones were not well selected," or they were obtained "at the first opening of the quarry, and were not as good as now furnished." And again, as already remarked, there are few cases in which parties are permitted to select the material without prejudice, the influence of interest, or the absence of important information. Examples are everywhere before us of the improper selection of materials for buildings, and these examples do not deter from their use in the erection of others. When good material is abundant and accessible, it will be used; in other situations, comparatively few durable structures are likely to be erected.

SOMERSETSHIRE ARCHÆOLOGICAL SOCIETY.

THE twenty-second annual meeting of the Somersetshire Archæological and Natural History Society commenced at Wincanton on Tuesday week, under the presidency of Sir William C. Medlycott, Bart. At twelve o'clock the members and friends assembled in the Townhall for the transaction of the annual business of the society. Sir William Medlycott was elected President for the ensuing year, after which Mr. W. A. Jones, general secretary, read the financial statement, from which it appeared that there was a balance in favour of the society of £121 13s. The total receipts for the year amounted to £247 5s. 10d., including the previous balance of £35 17s. 7d. The report stated that the operations of the society had been well sustained during the past year, and that the volume of "Proceedings" in the press would be delivered to the members before long. Many valuable additions were stated to have been made to the museum of the society," which is every year becoming more and more recognised as the most suitable depository for all objects of interest illustrative of the archæology and the natural history of the county. The report went on to recommend that a memorial should be sent from the society to the Secretary of State for the Home Department, urging Her Majesty's Ministers to take effectual steps for the preservation and protection of the many interesting monuments of antiquity which are scattered over the country, and concluded by announcing that Mr. W. Ayshford Sanford had resigned his position as one of the general secretaries of the society.

The balance-sheet and report were unanimously adopted, and it was resolved, on the motion of Mr. John Batten, seconded by the Rev. Canon Meade, "That it be an instruction to the Council to procure a list of such memorials of the class referred to in the report as it would be desirable to place under the care of the State, and to obtain, if possible, the co-operation of the proprietors of those memorials in carrying out the wishes of the society." The vice-presidents were then re-elected, with the addition of the Bishop of Bath and Wells and Mr. William Long; the treasurers were also re-elected, with Mr. Jones and Dr. Pring as general secretaries, and the following gentlemen were appointed members of the committee, in the room of those retiring by rotation:—Messrs. W. P. Pinchard, J. F. Norman, W. M. King, T. Meyler, J. Marshall, and J. E. Anderson. The local secretaries were re-elected (with the addition of Mr. Ayshford Sanford and the Rev. H. D. Wickham), and the appointment of Mr. William Bidgood as curator of the society's Museum at Taunton was confirmed.

The first paper read was "Civil and Historical Notices of Wincanton and its Neighbourhood," by the Rev. H. D. Wickham. This was followed by "A Notice of the Life of Lord Chief Justice Dyer" (who was a native of Wincanton), by Mr. Arthur Jones. Next in order came the Rev. Mr. Heal with "Notes of the Parish Church of Poyntington;" and after a paper read by the Rev. Mr. Barnes, "On a few points of Somersetshire History as shown by Language," the meeting adjourned. Some of the members then visited the church, and at 4.30 a *dejeuner* was served at the Greyhound Hotel, about thirty-five sitting down to table. In the afternoon the party visited the temporary museum in the National Schoolroom, and at 6.30 a second meeting for the reading of papers was held, when the following was the programme:—The President, Sir William Medlycott, "On the Civil War in Somerset, as detailed in an ancient and rare pamphlet;" Mr. Emmanuel Green, "On the Battle at Langport;" Mr. John Batten, "On the Sequestrations in the Manor of Catsash;" and Mr. E. T. Stevens, of Salisbury, "On Flint and Stone Implements, with reference to some specimens in the Blackmore Museum."

On Wednesday the members of the society and friends had an excursion (starting from Wincanton at 10 a.m.) to North Cadbury, Cadbury Camp, Compton Church, and Mapperton; and on Thursday they went to Templecombe, Stowell, Milborne Wick Encampment, Milborne Port, and Henstridge, reaching Templecombe Station at 7 p.m. The members were invited by the President to luncheon at Ven.

◆

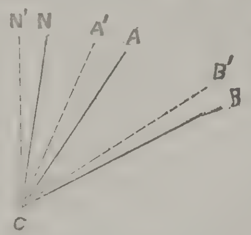
The foundation stone of a new Corn Exchange at Doncaster will be laid on the 22nd inst.

The Surveyor.

THE PRISMATIC COMPASS.

IN our articles under the above general title, most of the field instruments employed by surveyors have been described, their advantages investigated, and the manner of using them expeditiously and correctly explained. There are still some others to which we have not hitherto adverted, but which are well worth the attention of members and intended members of the profession. We are not referring to any that, although they may have been valued in earlier times, are now obsolete or nearly so, having been replaced by more accurate and delicate instruments, but to those which are among the recognised types daily made use of in all field operations. The prismatic compass is a valuable little instrument, the observations of which, as its name implies, depend upon the natural and immutable relations that exist between "the needle and the pole." It is not our intention to illustrate it by a drawing, or to describe its construction minutely, which would amount to nearly the same thing, but merely to refer to such of its principles and details as will suffice to render the working of it, and the registration of its observations, distinct and comprehensible. Our readers will find the other information in any of the catalogues of the makers of surveying and philosophical apparatus. Similar to many other instruments of this description, the prismatic compass was originally intended for military purposes, its extreme portability and facility for measuring angles rendering it exceedingly well adapted for taking flying observations. As will be seen as we progress, it is not suitable for recording the angles of any of the large or main triangles of a trigonometrical survey, or of any field work of an important and extensive character, but it becomes very useful in what is termed "filling in" the details of a survey. When the principal main lines have been ranged and the base angles ascertained and checked by means of the transit and theodolite, then those larger and more cumbrous instruments may be safely laid aside, and the interior work or details obtained by the prismatic compass or the pocket sextant.* The prismatic compass may be held in the hand, or supported on a small tripod stand, according to the nature of the survey. When the latter method is employed, the angles can be observed with a much greater degree of accuracy than would be expected from so small an instrument. Some examples of this instrument are made expressly for mounting upon a stand, and are supplied with a couple of levels, placed at right angles to one another, to ensure the whole apparatus being set up horizontally, which, it is scarcely necessary to remark, must always be done, whether it is held in the hand or supported on a tripod. When, however, levels are added, a tripod is used, and the size of the instrument increased, it becomes a question whether it does not lose its peculiar advantages and should not be replaced by a small transit or theodolite. All surveying instruments should be used strictly for that description of work for which they are best adapted, and it is unadvisable to make them serve for purposes for which a different instrument is the better suited, by adding to them various appliances and appendages which do not really and properly belong to them. Each should be sedulously restricted to its own sphere of action and not allowed to entrench upon that of another. As an instance in point, we may allude to the fact that theodolites are sometimes used for levelling, where a level is the proper instrument. It is true that one "*can* level" with a theodolite, but it should not be employed for the purpose, except under very peculiar circumstances. In those cases the ground is not actually levelled over, but measured, and the angles of elevation and depression taken, which is the proper duty of a theodolite. One would not measure a yard of carpet with a pair of compasses, although it "*could*" be done without any great difficulty.

The essential difference between the ordinary compass and the prismatic compass is that one of the "sights" of the former is replaced in the latter by a prism—hence the name. By means of this prism the object, or rather its bisection by the vertical wire, is perceived at the same moment as the reading of the angle it makes with the magnetic meridian. The prismatic compass can therefore be used both for ascertaining the magnetic bearing of any one particular object, or the actual angle between any two or more objects. There is a close resemblance between this instrument and that which is known as the "miner's dial," but considerable improvements have been introduced in the former, which were altogether wanting in the older instrument. The principle of the prismatic compass will be readily understood from a reference to the accompanying diagram. Let the line C N represent the zero line of the instrument, or the direction of the magnetic meridian. It is the duty of the maker to see that the vertical plane of the upright wire or "sight" passes through the zero point. Any instrument that does not on first inspection fulfil this condition should be at once rejected, for although an allowance could be made for it, still the accuracy of the observations might be imperilled in consequence. In the diagram let A C N be the angle observed by the compass when the sight is directed to an object at A. The angle A C N will then be the magnetic bearing of A. Let the sight be now directed to B, and the angle read off through the prism will be B C N, the magnetic bearing of the object at B. The actual angle between the two objects at B and A is evidently equal to A C B. But the angle A C B is equal to the difference of the two magnetic bearings of the respective objects. Thus we have angle A C B = (B C N − A C N). There is one advantage possessed by the prismatic compass which is peculiar to all the methods of measuring angles depending upon the magnetic law. It is that any error in the direction of the original line C N, or azimuthal line, does not affect the actual angle between any two objects, provided that the observations themselves be correctly taken. Referring to the diagram, suppose that the slit in the prism is not placed diametrically opposite to the sight, and consequently the line which should be in the position shown by C N becomes altered to that of C N′. It is of no importance what may be the real cause producing a change of direction in the azimuthal line, only let us consider it to be altered to C N′. If the separate angles are correctly observed, we shall always have the angle A′ C N′ equal to A C N, and the angle B′ C N′ equal to B C N, and consequently (B′ C N′ − A′ C N′) will equal B′ C A′, which will always equal B C A, the actual angle between the two objects at A and B.



The minuteness with which angles can be observed with all instruments manifestly depends upon their size, as a large circle can be more closely divided than a smaller one. For example, a five-inch theodolite cannot have its horizontal limb divided into a greater number of subdivisions than what will permit the vernier to read to twenty seconds, or the third part of a minute. But if the diameter of the limb be increased to six or seven inches readings can be readily taken to ten seconds and less. Some of the theodolites employed by the Royal Engineers in the great trigonometrical survey of England and Wales were constructed with the horizontal limbs three feet in diameter. This will give some idea of the surprising degree of accuracy to which the observations were carried, and also account for the very successful manner in which the whole of the trigonometrical operations were conducted. It is the fault of all instruments acting upon the compass principle that their subdivisions cannot be pushed to the same limit as those of more expensive and more delicately made ones. In the ordinary examples of the prismatic compass the card cannot be subdivided to more than the third part of a degree—that is, to twenty minutes, but it will read to half this, or to ten minutes, by "estimation," as it is called. It must, at the same time, be borne in mind that this estimation depends for its accuracy altogether upon the practice and judgment of the observer. As a rule, beginners had better not attempt to subdivide the divisions of the card, but read off the one nearest to the line of sight. In order to take angles between objects situated either above or below the plane of the instrument, it is provided with a small mirror, which acts as a reflector. By its means the magnetic azimuth of the sun can be obtained, care being taken to interpose the dark glasses between the sun's image and the eye. An objection to the prismatic compass is that it is quite impossible to use it in very windy or stormy weather. This, to a certain extent, is true, and the remark in a less degree will apply to nearly all field instruments. But an experienced surveyor, and one who is accustomed to the compass, will do accurate work with it in situations and under circumstances where some men could hardly take an observation at all. There is always some amount of truth in the old saying, "Bad workmen complain of their tools." Unless when the survey, such as one of a military nature, forbids the employment of a tripod-stand, it will be found greatly to conduce to the comfort and precision of the work, and it is small, light, and easily carried, and ensures the horizontality of the compass and the free play of the card much better than even a practised hand can do. There are no levels required in using a stand. It is simply set up by shifting the legs of the tripod to and fro until the card is perceived to play easily and freely on its centre. Any one accustomed to setting up either theodolites or levels will in a minute or two put up a prismatic compass in order for taking observations. If it is intended to hold the instrument in the hand, it is questionable whether the pocket sextant will not prove more serviceable, unless the objects to be observed are situated far out of the horizontal plane of the observer.

---

* For a full description of this useful little instrument, and the method of using it and registering the observations, *vide* the Building News for March 11th, 1870.

◆

THE KENSINGTON-ROAD "IMPROVEMENT."

MR. AYRTON is not vanquished, if the report in the *Kensington News* be true that another attempt is to be made to induce Parliament, in the next session, to sanction the course of spoliation of Hyde Park and Kensington Gardens, which but two or three months ago excited such a storm of indignant feeling on the part of the public :—"According to the plans for which estimates are now being obtained, the Flower-walk is to be sacrificed ; the railing which separates the Gardens and the Park is to be taken down ; the portion of the Park which lies westward of the Alexandra Gate is to be cut off and thrown into the Gardens ; the elms which fringe the Kensington-road are to fall or be removed ; the road is to be set back, and a crescent with a flight of stone steps formed in the centre, leading up to the carriage-drive between Queen's and Alexandra Gates ; the roadway is to become then merely a landing-place between the first and second flights of steps up to the Prince Consort Memorial ; and a large space of ground, part of which belongs to the Park and part of it to the Gardens, is to be planted out as an Italian garden at the base of the Memorial. The object of placing a vast mound of earth just to the west of the Memorial can now be perceived. There is to be an extensive 'levelling-up' in that quarter ; and the communications of Queen's Gate, Hyde Park Gate, and Kensington-town with Hyde Park are to be completely severed. These plans are based on the hypothesis that Parliament and the people will stand by to see the lands (which are properly theirs) despoiled, and at their own cost."

JERVAULX ABBEY.

JERVAULX was founded first of all in 1150, at Fors, near Askrigg, but that situation was found to be so cold and bleak that the monks soon removed to the banks of the Eure. It belonged (says the Rev. John Pickford, M.A., who recently visited the ruins), like the other Yorkshire abbeys of Rievaulx and Fountains, to the Cistercians, and was a noble pile. The last abbot was Adam Sedbergh. A fine screen, now preserved in the chancel of Aysgarth Church, removed from Jervaulx, was most probably, from the initials upon it (A.S.), erected by him in the abbey. The church has been a noble building, measuring 270ft. in length, and in it is a fine collection of sepulchral slabs, which once marked the graves of the abbots. The site of the high altar is clearly marked out, and at its east end is the chapel of Our Lady, somewhat similar to the chapel of the Nine Altars at Durham Cathedral, and at Fountains Abbey. The Chapter House has been a fine room, measuring 48ft. by 35ft., and has had its roof supported by columns. In it some of the abbots found a sepulchre, and it contains the slab of John de Kingston, inscribed more than 700 years ago. The kitchen is well worth inspection, with its huge fireplaces surrounded still by fenders composed of stones. The marks of the fire yet remain in the ample chimneys, and the arched openings in the wall through which the dishes were handed to the refectory are perfect. Though Jervaulx does not possess the magnificence of Fountains, the noble choir of Rievaulx, or the beautiful foreground which is the great charm of Bolton Priory, yet in some points it yields to none of the Yorkshire abbeys, and its fine collection of sepulchral slabs renders it one of the most interesting ruins in the kingdom to the antiquary.

WEST FRONT OF WELLS CATHEDRAL.

THE west front of Wells is a thing which it is the fashion to rave about, says Mr. Freeman, in his "History of the Cathedral Church of Wells." It is the finest part of the church; the finest thing in Somersetshire; the finest thing in England; for aught I know, the finest thing in the world. I am perverse enough to think differently, and to look on the west front as the one part of the church of Wells which is thoroughly bad in principle. It is doubtless the finest display of sculpture in England; but it is thoroughly bad as a piece of architecture. I am always glad when I get round the corner, and can rest my eye on the massive and simple majesty of the nave and transepts. The west front is bad, because it is a sham—because it is not the real ending of the nave and aisles, but a mere mask, devised in order to gain greater room for the display of statues. The architecture, in short, is sacrificed to the sculpture. A real honest west front, if it have two towers, will be made by the real gable of the nave flanked by a tower at the end of each aisle. So it is at York; so it is at Abbeville; so it is at Llandaff. Or a front may, like those of Winchester, Gloucester, and Bath, have no towers at all, but may simply consist of the endings of the nave and aisles, set off with turrets and pinnacles. Or a front may be, like that one glorious and unequalled front at Peterborough, built up in front of and across the endings of the nave and aisles, but without at all professing to be itself their finish. All these forms are honest; but I deny the honesty of such fronts as those at Wells, Salisbury, and Lincoln. In all these cases the front is not the natural finish of the nave and aisles; it is a blank wall built up in a shape which is not the shape which their endings would naturally assume. It is therefore a sham; it is a sin against the first law of architectural design, the law that enrichment should be sought in ornamenting the construction, in giving a pleasing form, and such enrichment as may be thought good, to those features which the construction makes absolutely necessary, not in building up anything simply for the sake of effect. The main features in a front should be the windows and doorways. The small size of doorways is a common fault of English as opposed to foreign churches; but at Wells they reach the extreme point of insignificance in those narrow mouseholes at the end of the aisles, through one of which we are commonly driven to creep, while the west doorway remains shut. But even the west doorway itself is a very small mouthful, I will not say after Laon or Rheims, but after York; nay even at Lichfield and Salisbury the doorways have a little more of dignity than they have at Wells. In a really good design the architectural features ought to be the first thing; sculpture or any other source of ornament should be secondary. At Wells the rule is reversed; a sham wall is built up and loaded with statues, and the windows and doorways are left to shift for themselves.

FONTS.

FONT IN ALL SAINTS' CHURCH, LEICESTER.

THIS church, though in a dilapidated condition, and possessing no striking architectural features, is an interesting building, dating from the Norman period. The lower part of the tower is Early English, and has buttresses of an unusual description. The tower arch, which opened into the north aisle, has been built up, and a small door substituted. The effect of the interior of the church is marred by the gallery at the west end, and the comparatively modern chancel and plaster ceilings. The pulpit is an old one of the Perpendicular style. The Early English font (the subject of the sketch) is in remarkable good preservation, but is almost hidden from view by the pews which surround it.

FONT FROM ST. MARY'S CHURCH, LEICESTER.

THIS curious and interesting font (which forms part of this week's illustrations), is from the well-known church of S. Mary de Castro, at Leicester. It is placed under the tower, the fine arches of which partake somewhat of the pointed horseshoe form. Closely adjoining the tower are two Early English segmental arches, with a fine clerestory of lancet lights above, which were blocked up previous to the restoration of the church. There are many other objects of interest in this church. J. L.

BUILDING NEWS SKETCH BOOK.

XLI.—PRIORY, OLD MALTON, YORKS.

OLD MALTON is situate on the borders of the East and North Ridings. The present church consists of the south-west tower and nave of the Priory church, founded by Fitzjohn. It is a very good example of the Early Transitional style of the country, the west door being richly moulded with carved zigzag ornaments in the arch, and dogteeth. The caps are carved foliage. The mouldings of tower windows are also very bold and good. A door with beak head ornaments remains on the east wall of the north aisle. The triforia is very good indeed, and delicately moulded: it is Early English. There is some late work in the church and old stalls, which have been painted and repaired. The west window is a late insertion, and partly blocked up. In a farmhouse, close to the church, I was told were remains of some fine work, perhaps part of the Priory, but unfortunately I was not able to visit it, being pressed for time. Some stone coffins remain outside the east end, some of great length and very narrow; also one about 18ft. long. The north-west tower has fallen, and only remains 6ft. or 8ft. high. This church is well worthy of a visit by any architectural tourist visiting the neighbourhood. A description of the town, church, and Priory will be found in "York and the East Riding," I believe.

T. C. Wilberfoss.

A WORD FOR CARRIAGE PAINTERS.

THE carriage painters, as a class of artisans, are men who have many trials and difficulties to encounter at every step, I therefore have taken up the pen to vindicate their cause and exonerate them from some of the blame that is too often attributed to them. I will attempt to enumerate some of the difficulties with which they have to contend and overcome, and what is expected of them. In the first place, there is a large amount of inferior and worthless stock in the market, such as paints, varnishes, and japans, and if through ignorance or accident their employers buy this stock, the painters are, of course, expected to test it, and oftentimes are compelled to use it, and although they may condemn the stock, their employer expects a well-finished job; therefore, he is not satisfied with the job if it is not so, and often takes the painter to task about it, when in reality he himself is the cause, by buying inferior materials which can be purchased for a few pence less than a good standard article.

Secondly, they have to contend with and overcome any little defects of the wood-workman. If a joint is not properly made or an uneven place or knot occurs, the woodman often says "*Let that go, the painter can make it all right*," and it is too often the case that too many of such blunders are left for the "*painter to make all right.*" Then when the job comes from the hands of the smith it is often found to be blistered in spots where he has touched it with hot irons, or it has several hammer dents upon it which mar the surface, all of which the painter is obliged to remedy before he can produce a finished job. All this involves considerable expenditure of time and trouble, and often causes hard words. It is, indeed, vexing to the painter, after he has endeavoured to produce a fine even surface, to have it marred by the carelessness of others.

Thirdly, they often have to contend with improper paint rooms and varnish rooms. A good job of painting or varnishing cannot be produced without good rooms that are adapted for the purpose intended. If employers furnish their painters a room for finishing work, which has walls that are continually shaking or even falling down, and during blustering weather the wind rushes through at crevices, he must not expect to get a very nicely finished job, as it is utterly impossible to do one in a room of that description.

In the fourth place, the painter is often assailed by customers who come back to the shop in six months or a year and report that the paint and varnish are perishing upon their carriages, and blaming the painters for a poor job; but when you come to investigate the case, in nine cases out of ten it will be found they themselves have caused the result by housing their carriage in the same room with their horses. It is a hard matter to convince some of them that the ammonia arising from the stable is the real cause.

Therefore, in conclusion, I will say, *furnish your painters with good stock, good smooth woodwork, good rooms and tools;* then if he does not produce good work it is his fault and no one's else. Wadsworth.

COMPETITIONS.

Bramley.—The Guardians of the Union of Bramley, near Leeds, having determined to erect a new workhouse to contain 250 inmates, lately advertised for designs, offering two premiums of £50 and £25 respectively. The buildings are estimated to cost about £9,000, exclusive of the boundary walls, value of land, &c. Fifteen sets of plans were submitted from architects in London, Liverpool, Leeds, &c. The designs of Messrs. C. S. & A. J. Nelson, of Leeds, have been selected for the first premium, the second being awarded to Messrs. Wade & Turner, of Barnsley. The works are to be proceeded with at once, under the superintendence of Messrs. Nelson.

Epsom.—The Epsom Burial Board have in a limited competition selected the designs by Messrs. R. M. Shaw and W. Young, of Exeter Hall, Strand, and Crooked-lane, City, for the chapels, lodges, gates, &c., to be erected at their new cemetery. The selected designs are in the Early Gothic style, of a decidedly English character, and with a picturesque treatment. The works are to be commenced immediately, under the superintendence of the above-named architects.

Hereford Cathedral Illuminated.—At the Hereford Musical Festival on Tuesday week, the Cathedral was lighted up with singular effect. A correspondent says:—Many persons have doubtless seen the magnificent spectacle of Cologne Cathedral lighted up by coloured fires; others may have witnessed our own S. Paul's illuminated; and familiar sights are the choirs of our Cathedrals on winter afternoons by dim gas or candle light. But the entire nave of an old Norman church illuminated, with its massive piers casting long and deep shadows around, is a sight which Hereford Cathedral alone affords. The effect is grand in the extreme, and the gloom, which the light throws into contrast, truly impressive.

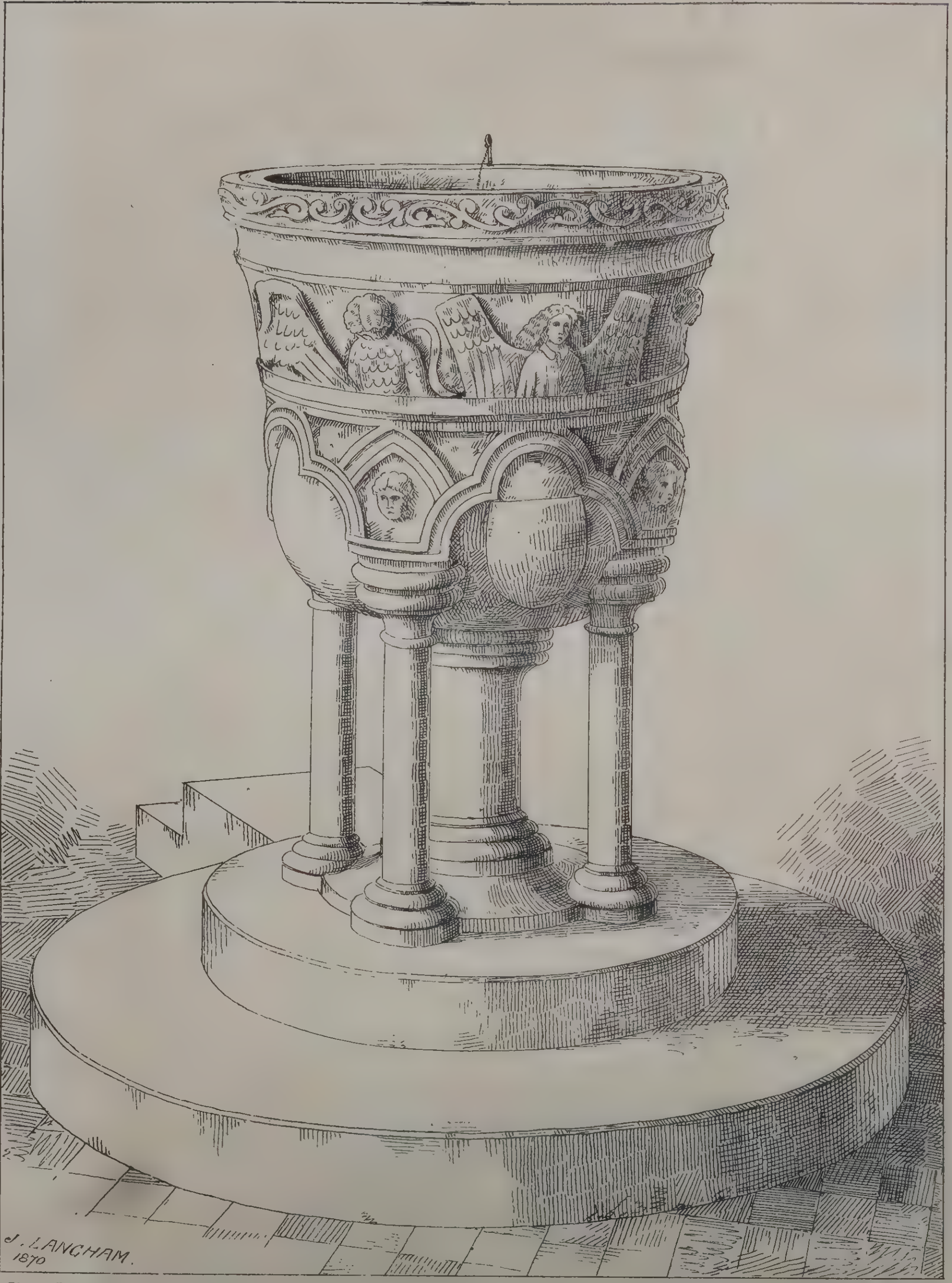
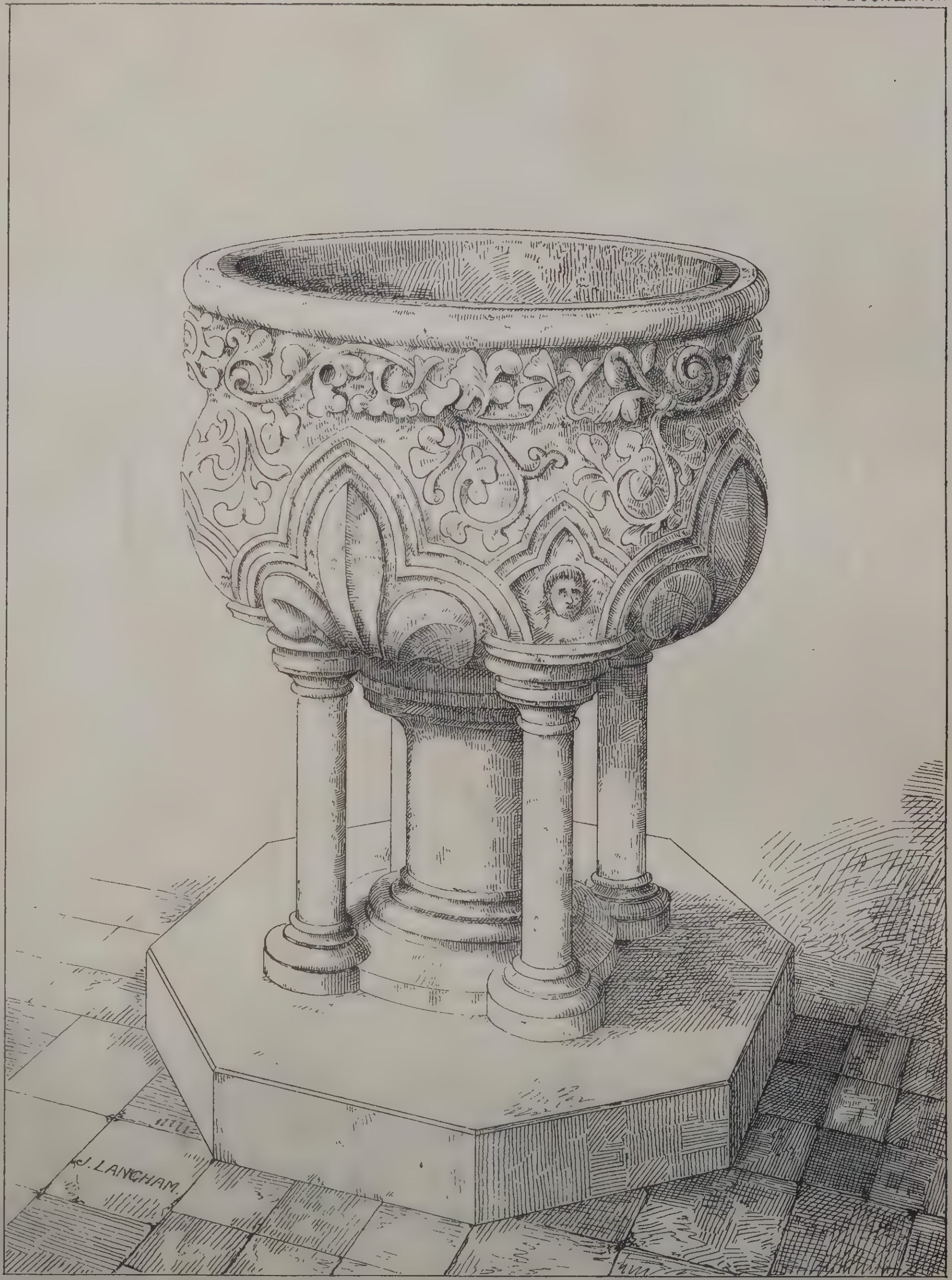


Photo-Lithographed by Whiteman & Bass, London

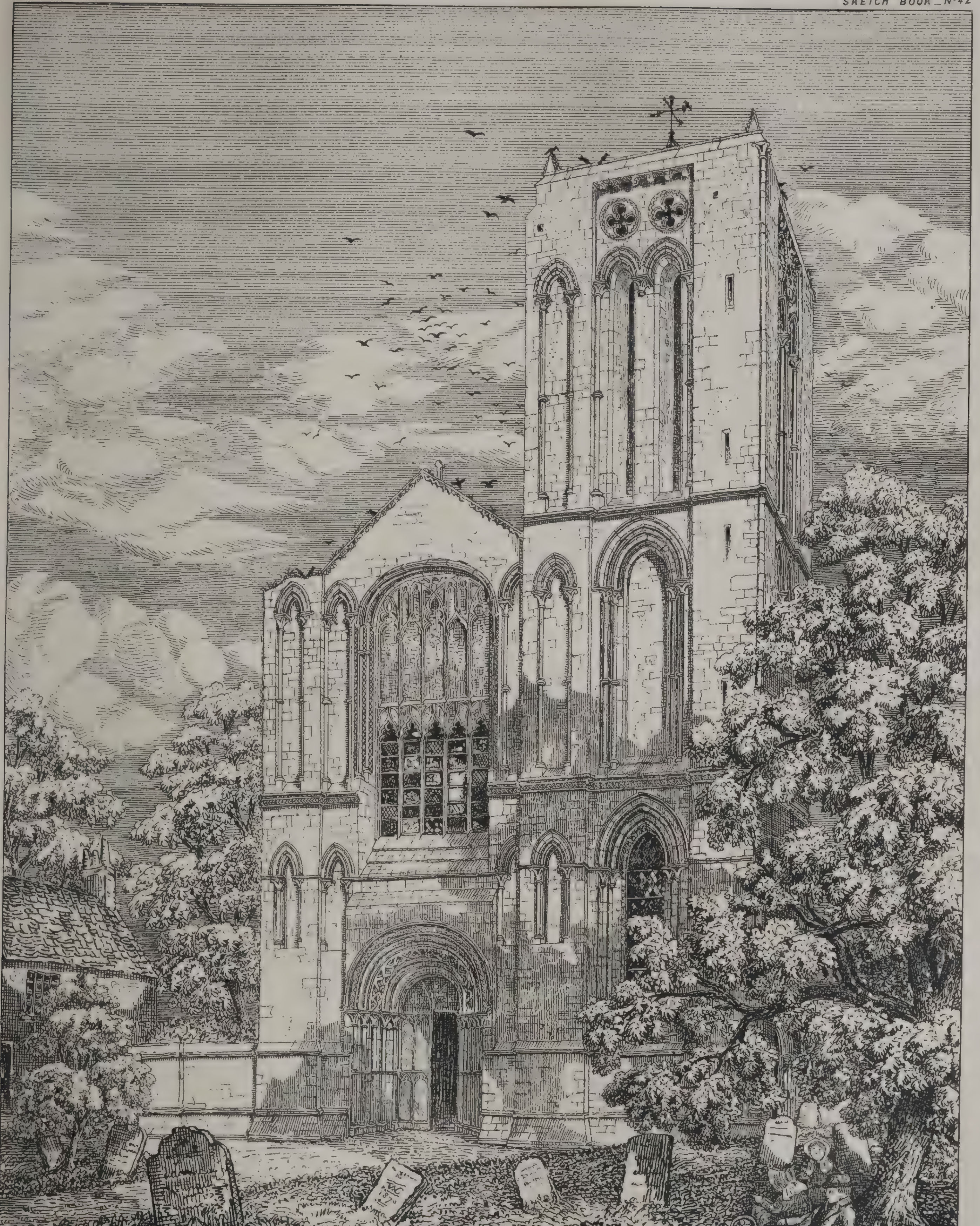
✠ FONT IN ST MARY'S CHURCH ✠

LEICESTER



✠ FONT IN ALL SAINTS' CHURCH ✠

LEICESTER



West Front of the Priory Church, Old Malton : Yorkshire. J. C. Wilberforce, delt. 1870.

Photo-Lithographed by Whiteman & Bass, London

Furniture & Decoration.

THE THEORY AND PRACTICE OF MODERN HOUSE PAINTING AND DECORATION.

By AN EXPERIENCED WORKMAN

PREPARATORY PROCESSES.

(Continued from page 155.)

OLD woodwork when about to be repainted requires much care in its preparation. Of course, the amount of labour required will depend upon the state of the work. If it is in pretty good condition, rubbing down with pumice-stone and water may suffice to bring it right for painting; but if it is very old work, which has had a great many coats of paint put upon it time after time for a long series of years, and has chipped or cracked, it may be necessary to remove the old paint altogether, as being the quickest and best remedy to apply. Or it may be that the work is sound, but uneven and full of slight hills and hollows; in this case it may be filled up either with distemper filling, or with quick varnish filling. In the first case, when the work only requires rubbing down with pumice-stone and water, the workman should proceed as follows:—In selecting the pumice-stone for this purpose, the close-grained and harder kinds should be rejected, and only that used which is of an open porous nature, the former kind being apt to clog up and scratch the work, while the latter will do the work effectually. The work will be facilitated if a little ground or powdered pumice-stone is used with the lump. The loose pumice assists the lump to bite or cut better, and also prevents its clogging with the paint—for it will often happen that if the pumice be rather hard, and the paint dry (through not having much oil in its composition), the paint will gather upon the face of the pumice-stone and prevent its biting, rendering it, consequently, of no effect, which fault the loose pumice in a great measure prevents. In rubbing down, it is best, and answers the purpose most effectively, to move the hand in a circle as much as possible. and not straight up and down. The circular movement will produce a level surface, as it touches every part equally; but the straight up-and-down rubbing tends to produce an unlevel and streaky or ropy surface. It is necessary for the workman to have a piece of flagstone beside him when rubbing down to level and clean the pumice-stone, or to rub it into shape, so that he can get into corners and angles. In rubbing down the mouldings the pumice-stone may be cut with a fine saw, and rubbed or filed to the exact shape to fit the moulding. This is very easily done, and is the most effective means of getting at the various parts of the moulding. Ground pumice-stone and felt may be used also for this purpose, but will not be so effective in the first instance as the lump in clearing off any roughness or protuberances. The pumice should be wiped off with a wet sponge occasionally during the rubbing down, to see what progress is being made. When it is rubbed down sufficiently, the whole must be well cleaned off with water, in order to remove all loose particles resulting from the rubbing. This should be carefully done, or else the grit will work up in painting, and thus make the work rough again. When the work is in pretty good condition after being rubbed down, it may perhaps only require facing-up here and there with hard stopping preparatory to painting; but if it is in bad condition, and requires filling up, it must now have a thin coat of oil-paint. When we say a thin coat we mean a bare coat—the oil-colour must be rubbed as bare as possible, because if there is too much paint put on the work it will not harden sufficiently to bear the rubbing down after the filling-up colour is put on, but will tear or peel up. The oil-colour forms a key for the distemper filling to hold by, and if distemper filling is placed upon old work without this coat of oil-colour it will not hold but will chip off in working. What is here called filling may be mixed in several ways, and is used for the purpose of producing upon the surface of woodwork or plastered walls an even, level, and uniform surface. Staircase walls are sometimes filled-up in distemper, but rarely with a good and lasting effect; for we have found this sort of filling more liable to fail on staircase walls than in a warm room. In damp weather the size in the distemper filling is affected and softens, and in dry weather it contracts; and so, between the two, sad havoc is made with the paint and varnish which covers it.

Distemper filling is made with the best washed whiting and glue or parchment size. The whiting is broken up in water to the consistency of a stiff paste; sufficient size is then added to bind the whiting, so that it will rub down with sand-paper without crumbling away in rubbing. The quantity or proportion of size to whiting must be determined by the workman himself. It is best to test the mixture by actual experiment before using, for if there is too much size in the stuff it will not rub down when dry, and if there is too little size it will crumble away under the sand-paper; so the safest and best plan is to mix the colour and try a portion upon a part of the work. Let it dry, and then test it with the sand-paper; if it rubs down easily, and without crumbling away, and leaves a smooth face, then the stuff is all right, and the work may be proceeded with confidently; but if it crumbles, it will require more size to be added. If, on the other hand, it is too hard, and the sand-paper will not cut it, then it must be reduced with water, and more whiting added. In the act of rubbing down, the sand-paper must be placed on a flat piece of wood, as before described. Placed thus, the sand-paper will, of course, operate upon all the projecting parts, leaving the hollows filled with the distemper, thus producing a level surface; but care must be taken not to press heavily, or the paper will scratch and break up the filling. Gentle rubbing will alone effect the end in view. When the work is as level as it can be got, and it is found not to be sufficiently filled up, another bare coat of oil-colour must be put upon it, and when dry, another coat of filling, and so rubbed down again as before, until a level surface is produced. It must be noticed here, with regard to distemper-filling, that the less body there is left upon the work the more likely it is to stand without cracking; and, as a rule, it should be rubbed down until the paint appears on all the prominent parts. It will thus only leave the filling in the hollows and uneven places, where, of course, it is most required.

Quick, or varnish filling, is a mixture of white lead, japanners' gold-size, or quick-drying varnish and turpentine. There are several sorts of powder used to mix with the paint instead of white lead. Spruce ochre is used by the coach-painters, and there is a black or lead-colour powder sold for this purpose; but in practice we prefer to use the ordinary white lead, ground in oil, with sufficient copal varnish or japanners' gold-size to bind and harden it, so that it will rub down when hard; but of course it will take some time to harden, and, in fact, ought to stand a few weeks before being rubbed down. But when so treated, we have no doubt of its being the best filling, in every respect, that can be used, for it rubs down well to a smooth hard surface, and the oil contained in the lead has a tendency to prevent the work cracking afterwards—this liability to crack being the great danger, and, in fact, the great failing of most of these compositions for filling up painted work. It frequently happens that after immense labour has been bestowed upon the work in preparation, and after it has been expensively painted and ornamented, it will, in course of a year or so, begin to crack all over its surface, until it becomes one mass or network of cracks, which, of course, spoils and ruins the work. We have seen numerous jobs (executed by some of the first firms in the kingdom) which have turned out bad in the manner described, and this has solely arisen from the fact of the filling having been either too quickly followed up, one coat upon another, or else from the colour being improperly mixed. Filling-up colour is also made with dry white lead ground in turpentine, sufficient varnish being added to bind the lead so as to enable the same to be rubbed down. We have found by experience that it is always best to add a few drops of boiled linseed oil. When the filling is mixed as above it gives tenacity to it, and consequently it is less liable to crack. If there are any holes or indentations in the work, they must be faced up with hard stopping before the first coat of filling is laid on. Varnish filling differs from distemper in the fact that we can lay on as many coats as we like, one upon the other, which cannot be done with distemper. Each coat of filling should stand one day at least before another coat is put upon it, in order to allow the turpentine to evaporate. Four or five coats may be laid on until there is a sufficient thickness to rub down to a level surface. When the filling has stood long enough to harden it may first be rubbed down with lump pumice-stone and water, as before described, great care being taken that no scratches are made. A deep scratch will necessitate the work being filled-up again, and so much labour will be lost. The dark-coloured filling-up powder may be used upon all work which has to be finished in dark colours, but is inadmissible when the work has to be finished in light tints of colour, as it requires so many coats of paint to cover the dark filling that the work necessarily becomes roughened or coarser than in the former case. Any slight scratches may be obliterated, and the work brought to a fine surface, by finishing the rubbing down with felt and finely-ground pumice-stone and water. Ground or powdered pumice may be had of various degrees of fineness, which may be used for different stages of the work—commencing with the coarse and finishing with the very fine on such work as requires it. The felt here spoken of is a thick white felt, made almost expressly for polishing marble and paint and varnish work, but is used for many other purposes besides. It varies in thickness, but the thicker it is the better for our purpose, so that it is made without any coarse fibre or other foreign matter mixed with it, as in that case it is liable to scratch the work. The felt should be fastened to flat pieces of wood of various sizes and shapes. A strong solution of shellac in wood naphtha makes a good cement to fasten the felt to the wood. Any strong resinous gum that will not dissolve in water will answer the purpose.

(To be continued.)

◆

DIARY OF THE ARCHITECTURAL ASSOCIATION'S LINCOLNSHIRE EXCURSION.

BY A MEMBER.

"ADMIT P. Q. R., Esq., to the several visits and excursions under the direction of Edmund Sharpe, Esq., M.A., from August 22nd to 27th, 1870."

Monday, August 22.—London to Lincoln, credentials as above. Great Northern Railway, Hitchin, Huntingdon, flat land to Peterborough, towers and spires and three-arched west front. Grantham: some of our number here by wrong train, have "done" the town in this $\frac{3}{4}$ hour. Railway down the Witham Valley; the South Cliff villages to the right, grey churches, trees, here and there tinged with autumn. Lincoln; a small troop emerges from the train in thick boots and grey cutaways and chummies, the dandies in figured waistcoats and neckties. Walk to the White Hart—Steep Hill, a (not) nominal insult ?

But does not that huge mass gain grandeur enough to make amends?—Jew's House, looks shaky, should be de-colour-washed—Smells, haven't by heart S. T. C.'s vigorous verse "Odeurs de Cologne," useful for quoting in country towns. Lunch. 2 p.m., Mr. Sharpe on the Cathedral, in the Assembly-rooms; Bishop, clergy, a few ladies; general sketch of history and forms of Gothic art:—

Black ... (Chocolate)	Norman Period	Circular arch alone used.	1066 to 1145
Blue ...	Transitional	Conflict between circular and pointed arch; emancipation from direct Norman influence.	1145 to 1190
Green ...	Lancet	Name from form of windows.	1190 to 1245
Yellow ...	Geometrical	The circle in window tracery.	1245 to 1315
Orange ...	Curvilinear	Free curves in window tracery.	1315 to 1360
Red... ... (Magenta)	Rectilinear	Right lined forms in window tracery.	1360 to 1500

Indicated thus by the colours of the Prismatic Spectrum.

A diagram to each member: these names used in all descriptions throughout. At Lincoln a complete series; portions in style of each period; strongest in quantity and perhaps in quality in Lancet and Geometrical. Subdivision of Rickman's divisions for increased accuracy of expression. Value of the study of mouldings: in conjunction with the forms of buildings they are the surest evidence for architectural history—a great comparative anatomist can deduce the form of an animal from a single bone; by proper use of study of mouldings a building may be dated with confidence within four or five years. Fully developed Gothic in the work of Bishop Hugh of Grenoble (S. Hugh of Lincoln) 1190 to 1200; emancipated from Romanesque influence; pointed arch used both for construction and decoration, each main order of arch mouldings specially prepared for on the jamb, with shafts, &c., caps with hollow bells, not bulged as earlier. Service at cathedral at four — drowsy. Dinner. Evening meeting at Assembly Rooms at eight; lecture by Mr. J. H. Parker. The work of Hugh of Lincoln the *earliest* true Gothic work in Europe. The work at S. Denis explained—Abbé Suger's work commenced 1140, pointed arches with Romanesque details (not in the upper church or the west front) only in the under chapel. Photographs and sketches to illustrate this. Bishop Hugh's life traced, and the buildings with which he was connected. He employed local architects—Geoffry de Noiers (Hugh's architect at Lincoln), probably, almost certainly, a native-born Englishman. A few words from Bishop Wordsworth. "Thrones and dynasties pass away. Cathedrals seem likely even to outlast the nations that built them. Something to rest against. Why have our cathedrals no accepted place in our modern life?"

Tuesday, August 23.—11 a.m. The cathedral described on the spot by Mr. Sharpe. Beak-head, north doorway of west front, latest trace of true Norman work; Transition in south doorway of west front more marked, probably a year or two of difference; quick spread of new features through the country; work of same kind practically contemporaneous. Bishop Hugh's work; his mad architect, G. de N.! (so called by Prof. Willis); experiments, and an infinite vivacity, vigour and originality—full Gothic at a single bound. A D. 1240, west doorways of choir aisles, perfection of mouldings and carvings. Presbytery (angel-choir), the glory of Gothic. How to finish the vaulting which has been built, part in ashlar and part in rubble. Mr. Sharpe advises "Use colour to harmonize, not to obliterate, traces of constructive masonry." Mr. J. H. Parker replies, "These buildings were designed for colour and were coloured—colour should be restored; wax colours advocated; damp does not injure them—subdued tones." (Is not this question affected by the nature of our ancient buildings, which we maintain as art museums, part of national and architectural history? They derive value from the idea of *genuine antiquity*; their value is in their forms, which are mainly intact: The colour can only be conjecturally reconstructed. Why attempt to bring such buildings quite within the range of modern living art?) Admitted to the Dean's garden, from which is obtained the best north view of the cathedral. Lunch. Bishop's palace; ruins, trees, and shrubs; the present house a mere block. View over the town, opposite side of the valley shrouded in grey smoke (foundries, &c.). 5 p.m., the town churches, S. Peter's Gowts (goutes, or drains) and S. Mary-le-Wigford; John of Gaunt's stables on the way—Norman, nearly a ruin. Good early work in both churches. Dinner. Thanks to the Rev. G. Hervey (secretary of local association), for obtaining for us every possible access to cathedral, &c. Responded to—"Come again." 8 p.m., meeting in assembly rooms. Mr. Sharpe on mouldings. The cymagraph of Prof. Willis improved by Mr. Sharpe. Accurate delineation of mouldings full size; most ingenious contrivances for construction of diagrams and their exhibition. Mr. Sharpe's, large collection the basis of accurate knowledge; has not theorized in the air. Ladies with us in Cathedral. One grave member states his attention is divided between the architecture and the Graces. Later, a spirited portrait discovered in sketch book of severe paterfamilias, appropriately among sketches of Angel-Choir—a face that might well have served for model to the sculptor employed there.

Wednesday, August 24.—Train, Lincoln to Caythorpe, 8·15 a.m. Carriages.—1. Caythorpe spire (well-rebuilt): curious double nave, half arch abutting against chancel arch.—2. Fulbeck. Good base courses. The cymagraph at work. Arrangement of tower and nave pinnacles and parapets admirable.—3. Leadenham. Mouldings, buttresses, tower, and spire.—4. Wellbourne. Sanctus bell and cross. East gable of nave. Remarkable entasis to spire: has spire been shortened? The effect peculiar but not unpleasing. "Properly an entasis is too strong if you can see it." Lunch under a tree.—5. Wellingore. Lead work of roof sloped rolls (on plan); effect not approved—disturbs lines of the architecture (also in new work, chancel roof, Spalding Church); good oak seats. Rectilinear.—6. Navenby. East windows (Curvilinear) mutilated, six-light; good remains. Piscina, sedilia, and Easter sepulchre. Carving a high type of conventional foliage.—7. Coleby. Font of interlaced Norman arcades; admirably managed transition of tower to spire. Pinnacles, buttresses, diversified parapet. Sketch of main points of interest by Mr. S. inside and outside each church.—8. Harmstone. Nave and chancel restored by Mr. Withers (modern polychromy). Norman tower arch.—9. Waddington—details.—10. Canwick. A detour from the route as settled. Norman ground story of nave in good condition. The whistle sounds, and the last rush to carriages takes place.—Back to Lincoln. Notes and drawings compared, and interchange of cymagrams in the evening.

Thursday, August 25.—Breakfast at 5·30. A very early start. Train to Boston, past Tattershall Castle on our left. Its great tower of brickwork 150ft. high, a lordly fortress! Morning papers: sad news from France. By "these Lincoln Washes," one recalls Philip Faulconbridge, in "King John."

This England never did nor never shall
Lie at proud foot of a conqueror.
Come the three corners of the world in arms,
And we shall shock them. Nought shall make us rue,
If England to itself do rest but true.

1. Sleaford. Large double-aisled Curvilinear church; the first of the broach spires we have had. Carriages; ladies, squires, and clergy, not to be daunted by any call for exertion; enthusiastic for archæology, old churches, and substantial lunches.—2. Silk Willoughby. Spire—"octagon spires on square towers best seen from angle of 105 to 110 deg. with one of the sides—not from extension of diagonal, set too much into the towers there. Get away a fair distance, then all the charm of their form."—3. Osburnby. Late oak seats. "I suppose ye want 'em for patterns," says a farmer with a glowing face. Pattern-books at work.—4. Threckingham. Curved broaches to spire. Ridge curves strongly marked; valleys consequently. Variety and ease. Geometrical spires rare; this a good specimen. Lichen on stonework; wonderful sharpness of mouldings.—5. Billingborough. Tall pen-pews. Curvilinear tower and spire—flying buttresses—too light to look "a purpose;" (rarely have any beyond filling in the outline.) Young ladies' college out for exercise. Enthusiasm of "the boys."—*Billingborough.* Lunch at inn.—Pleasant walk of a mile to (6.) Horbling. Ruin of central tower; affected entire history of church; now not vertical, tied with Brobding T-ties of iron. Mr. S. points the moral of all these cases —"Look to your foundations." West window, large five-light; "use of transom in Rectilinear work to reduce the long-drawn-out lights to pleasing proportions." "Put stained glass in west windows (beautiful afternoon effects); avoid it in clerestories; darkly painted glass deprives of light, hinders appreciation of form."—7. Swayton. The chancel has double asterisk ** (unusually interesting) in Mr. Sharpe's list (so kindly furnished to each member), deserves ⁂. Most refined elegance; very early Geometrical. Many of these churches—gems in good setting; trees, green churchyards (not so green now!) with lichened stone boundary walls, farmhouses and cottages, orange with lichen.—8. Helpringham; unrestored. The word "restoration" getting an unhappy tinge of not quite pleasant meaning equivalent to *renovation.* What is a good fresh word for putting-back-again-in-*statu-quo-ante*-the-Vandals? Lancet font of sunk arches and octagon angle shafts—receptacle for candle-ends and sticks, dusters, mops and brooms—and painted and veined a blood red! "Here's a Golgotha"—from Reparationist. Picturesque turret, top of rood loft stairs giving entrance to gutters of roof. Pattern books handled actively. Children in open tower—with bell ropes hanging. "Where going? To ring the bells?" asks our leader of them, paternally. "No, to Help-ring-'em," responds a flippant pattern-booker.—9. Heckington. A little cathedral—dignity. The carving of chancel fittings, piscina, sedilia, Easter sepulchre, &c., full of grace and genius: angels, foliage, grotesques. View from tower—Ewerby spire, &c., in the distance. Departure of an accomplished cymagrapher, Mr. S. says (till lately) his only rival in the world.—Dinner at Railway Hotel. Cymagraph. Moulures and molars. Good effect as to latter at least. Architectural joke! Train to Boston. Vocal harmony; clatter of train and engine suitable instrumental accompaniment.

Friday, August 26.—Boston Church, opened for us at 6 a.m. "The Stump;" view over the Deeps, five or six miles off, great perfection in masonry. W. Stukeley, M.D., Itin. Curios.—"from Barneck Pits." "No part of England has so many beautiful churches" (as his native Holland, Lincolnshire). Old woodwork—odd misereres and stall ends—restoration admirable; Pescod (green-peas) brass. Marble statue of Herbert Ingram in open space at east of church. Good market-place; seems a town without streets, lanes only.—8.15 train to (1.) Long Sutton. Carriages. Early transition, ground and clearstory of nave—clearstory now has aisle roof over it, and a tall later story above.—2. Gedney. West tower, buttresses, windows, trings, free and fresh Lancet, lots of Rectilinear clearstory windows, roof; ladders here as elsewhere, for use of enterprising seekers—

Half-way down
Hangs one that gathers *mouldings*, dreadful trade!

3. Fleet. Detached tower, curvilinear; not joined to church or designed for junction; picturesque north-east turret, stone roof and pinnacle, eight corbels to nave roof inside; "some of the most beautiful carved work to be found anywhere."—4. Holbeach. Mr. Ewan Christian at work here; all admire his nave roof. Pews cleared away; chairs on the old floors while further funds are got together. Original Curvilinear oak south door; tracery separate and scribed on. Lunch at inn. A few words of thanks to Holbeach parson; his reply cheered to the echo. "That's *a man*" from our Reparationist friend.—5. Whaplode. Norman chancel arch and east part of nave, Transition west part of nave. Norman piers surely prepared for different arches? Did they stand sometime and then get their superstructure? Clearstory—nearly as at Sutton, but windows larger—has not been restored! Odd that unfurbished churches are most piquant of all!—6. Moulton. Reversed curve in flying buttresses at base of spire; great grace of form. Tower in stages, set off at each and each, stage battering. Characteristic foliage, north and south of nave, cut with spirit (Transitional).—7. Weston. Mr. Moore, now vicar of Spalding, was incumbent here; church restored (no trace of evil meaning in the word this time). Age not destroyed, and

yet the building youthful for strength and endurance; evidences of much intelligent care; bar the inscription on chancel arch, hits the eye painfully, vulgar colour and form. Foliage (latest Transitional) in nave; relief. Font, a ring of sketchers and measurers. Mr. Moore's suggestion that shafts were prolonged to the base pronounced highly probable. See "Brandon's Analysis," Sec. i., E. E. 37, where, however, the jointing is not shown.—8. Spalding. As to Mulciber's work (*driven* in *this* case by a shower of rain)—

> The hasty multitude
> Admiring enter'd, and the work some praise,
> And some the architect; his hand was known.

(Mr. G. G. Scott.) Explanation by the Vicar. Much to see. Lancet church transformed in geometrical period. Shafts of nave lengthened full 6ft.; old caps replaced and arches rebuilt. The carving of rectilinear period mainly (inserted). Two-story porch at north-west of church, fan-vaulted with four quarter-conoids. Tower was all but lost; has been underpinned. Foundations on the surface, graves almost under the walls. Reversed curve buttresses to spire. New pulpit exquisite, like ivory carving; no woodwork, old or new, in this journey to compare with it. Needlework, fine cope. Beauchamp family. Drawing in Spring-Gardens Sketch-book. Dinner at the Red Lion (house with a red face; the White Hart just by has a white one. Chromatic illustration). Thanks to the Vicar of Spalding for his help and his company with us to-day. "If you go on with your cheese, I'll thank you," says the Vicar. The evening, the idea of calm embodied. Faint orange sky, distant soft grey clouds. Rail to Peterborough. Great Northern Hotel.

Saturday, August 27.—Each man for his own head from breakfast at 8 to 11. Then Mr. Sharpe, in and round the Cathedral. A complete Norman interior of great majesty and unity. Choir, nave, and transepts. Later work at west end, Transition; then the west front, towers, &c. Rectilinear retrochoir or new building. Monastic buildings. Remains and ruins. Adjectives wanted. Too much the habit to hurl out several. Some are right! Mr. Sharpe singularly happy in his choice, his expressions *carefully shaded*. Really our language wants enriching in this direction. Ruskin always showing this need; though he never falls short or returns on his own traces, his method is too fantastical for soberer people. Some hours in the cathedral. The Rev. Mr. H——— (our chaplain, as we had called him)—an enthusiastic architectural antiquary, with double the years of most members of our party, and more than double the energy of the most youthful,—obliged to go now. Hand-shaking all round. May we meet again! Dinner at 3 p.m. Letter presented to Mr. Sharpe, and his health drunk in a glass of champagne. Three cheers and one more! "This letter and those cheers are all I could ask or wish from you. I feel the purpose of this excursion has been answered. We have had good weather, our arrangements have gone fairly. We have seen and sketched, and measured some good work." . . . . "It would have been a pleasure to me to have had a photograph of the party." Hint given, acted on at 5·30 p.m., at west front of Cathedral, all hold their breath and gaze into vacancy! . . . . "Our healths are improved, good humour keeps pace with good feeling and good digestion. No awkward or unmanageable man has dared to appear within our gay-hearted company!" . . . Farewell and *au revoir.*—To Newcastle, Liverpool, North Wales, North Staffordshire, and a full carriage to London.

ARCHÆO LOGICAL.

The Cardiff Corporation has invited the Royal Archæological Society to hold its next meeting in that town. It is hoped that the Marquis of Bute's patronage of archæology will induce the society to accept the offer.

The Old City Wall, Oxford.—Whilst workmen were engaged in digging for the foundations of the chapel for the Methodist Free Church last week, in New Inn Hall-street, Oxford, one of the bastions of the old city wall was laid bare. The wall is nearly five feet thick, and is in a capital state of preservation. The wall runs parallel with New Inn Hall-street, to S. Michael's Church, and so to Mr. Dudley's garden, where there is another but more perfect bastion. Part of the old ditch has been laid bare in the same excavations.

Roman Pavements.—Mr. H. S. Harland, F.R.A.I., of Sawden Park, near Scarborough, has just made known the discovery of important Roman remains at the village of Oldcoates, near Blyth, Notts, about four miles from Ranskill station on the Great Northern Railway. Mr. Harland says the discoveries deserve more attention from antiquaries than they are receiving. The pavements were discovered by a workman in digging a mortar-pit adjoining a new house in course of erection. The workman turned up part of the principal floor of a Roman villa, which has since been bared, and is found to consist of about 25 square yards of tesselated pavement, the tesseræ being about ⅝in. cube, of a brown and bluish colour on a white ground, the whole worked into an elaborate geometrical pattern, and having a rude representation of a (supposed) Roman warrior in the centre. This floor is about 1ft. 6in. below the natural surface. A second floor, supposed to be that of a bath-room, or hot-room, is still lower, and on the west, and is formed of tesseræ about ⅝in. cube, and all of white stone. This floor forms two sides of a square, and appears to have flues below it. At one part is a flagstone or hearth, and near it was charred wood. Trial pits have been dug in three other places, and from the quantity of broken tiles and pottery discovered, it seems the buildings have covered a considerable space as yet uninvestigated. During the three years in which the new Catholic church and buildings have been in hand near the spot, numerous tiles, as if for roofing, &c., have been dug up, with numbers of animal bones; but no human bones or coins have been found. It is believed that permission for a systematic examination of the whole area would easily be obtained by competent persons, and the remains ought to be carefully preserved.

Building Intelligence.

CHURCHES AND CHAPELS.

Alston.—The new church of S. Augustine, Alston, was opened on Tuesday last by the Bishop of Durham. The new edifice stands on almost exactly the same site as the old church, and while the foundations were being digged, the workmen discovered the foundation of the old eleventh century church, containing traces of elaborate decoration and carving. The present church is in the style of the thirteenth century, and consists of nave, south aisle, chancel, and transept, the latter forming the vestry and organ chamber. The gas-fittings are by Messrs. Combe and Son, Glasgow; and the warming apparatus by Messrs. Walker and Emley, of Newcastle. The church is not yet complete, the tower having only been raised to a height of 30ft. As funds will allow this will be increased to 55ft., and a spire of 60ft. high added. The total cost will be £3,600. Mr. J. W. Walton, M.R.I.B.A., London, is the architect, and Messrs. C. and J. Armstrong, of Carlisle, are the contractors. The church will accommodate about 420 worshippers.

Bolton.—The Congregational Church, S. George's-road, Bolton, was reopened on Sunday last, after undergoing extensive and thorough renovation at the hands of Mr. W. H. Lomas, of Strangeways, Manchester. The north gallery has been extended to the full length of the building, and the organ, which occupied a recess at the back of the pulpit, has now been removed to the north-west side of the gallery. An improved warming apparatus, on the hot-air principle, has been fitted up by Messrs. Constantine and Whittaker, of Bolton. The platform formerly used by the minister, has been replaced by a pulpit of Caen stone, which is elaborately carved and decorated with marble shafts and columns, by Mr. Cole, of York. The communion is enclosed, and is laid with a beautiful mosaic pavement by Messrs. Thomas Dale and Sons, of Manchester. The interior of the church has also been elaborately decorated. The total coast has been about £500.

Doncaster.—The ceremony of laying the memorial stones of the Wesleyan Methodist Chapel and day-schools, Oxford-place, Doncaster, took place on Tuesday, the 23rd ult. Mr. Wm. Watson, of Wakefield, is the architect, Mr. Harold Arnold, of Doncaster, being the contractor.

Fenton.—A chapel for the Methodist New Connexion was opened at Fenton on Wednesday evening last. The new edifice occupies the site of the old chapel, with the addition of some ground at the rear, from which some old buildings have been removed. It is in the Gothic style of architecture, and the total length, exclusive of the entrance, is 55ft. 6in., the width 40ft. 3in.; the height from ground line to the ridge is 51ft. The front gable, facing Market-street, contains the principal entrance, and has three wide doorways with moulded arches, and stone labels with carved terminals, supported by circular stone shafts, with circular moulded bases, bands, and richly carved caps, the whole surmounted by a large five-light stone window with tracery in the head. To the right and left of the entrance are staircases leading to the galleries and orchestra, the right staircase being surmounted with a tall, slated, spirelet roof, and the left staircase by a tower with buttressed angles and spire, the total height of which is 110ft. to the top of the metal finial with which it is to be crowned. There is a gallery around two sides and one end, with a circular enriched and moulded front. The school, which is at the further end of the chapel, is two stories high, entrances to which are from Park-street. The total length is 56ft. 6in., and the width 35ft. 6in. The rooms are divided into departments for boys and girls, with separate entrances, in which are a number of class-rooms. Portable partitions are fixed in the upper room, so as to be readily taken down in order to admit of the room being used as a lecture hall or for public meetings. The chapel will accommodate about 700, and the schools are sufficiently large for about the same number of children. The total cost has reached nearly £4,000. The architect is Mr. Pinchbeck, and the contractors are Messrs. Wade Brothers, all of Manchester.

King's Norton.—A committee of the parishioners of King's Norton has been appointed to collect funds for the restoration of the parish church. Mr. Hopkins, architect, of Worcester, has reported to the committee on the works necessary to be carried out. He recommends a thorough restoration, at a cost of £2,500, of the whole fabric of the tower and spire, including the removal of all decayed stones and the substitution of fresh ones; the restoration of the parapet; the removal of the incongruous gables; and the rebuilding of part of the north aisle.

Locking.—The parish church of Locking, Somersetshire, was re-opened on Sunday week, after various additions and improvements, from the plans of Mr. E. Down, architect. Mr. Stradling, jun., of Weston-super-Mare, was the contractor.

Mylor.—The Bishop of Exeter re-opened Mylor Church, Cornwall, last week, after restoration at the hands of the Rev. J. Murray, the vicar, who has been his own architect, "and has aimed at restoration in the strict sense of that much-abused term." The cost has been upwards of £1,100. The reredos is to be filled with Salviati's mosaic work.

North Ormesby.—On Wednesday week the foundation stone of a new mortuary chapel, to be erected at the west end of the hospital, was laid. The chapel is from designs by Mr. E. Tidman, and the contract has been let to Mr. Aaron Lackenby.

Westhoughton.—On the 24th ult., the church of S. Bartholomew, Westhoughton, near Bolton, which has been re-erected by Mr. John Seddon, at a cost of about £6,000, was consecrated by the Bishop of Manchester. The building was designed by Messrs. Cunliffe and Freeman, architects, and is capable of accommodating 831 persons. The east window, by Clayton and Bell, has been erected by the parishioners, in commemoration of the munificence of Mr. Seddon. Its cost was about £300.

Winkleigh.—On Sunday week the parish church of Winkleigh, North Devon, was re-opened, the chancel, with the arch and wall of the nave adjoining, having been partially re-built and restored. Collections were made to form a fund for the restoration of the rest of the church. The work has been executed by the Messrs. Hooper, of Hatherleigh, under the designs of Mr. Christian, to whose report it is, indeed, owing that the Ecclesiastical Commissioners consented to restore the chancel.

BUILDINGS.

Barnard Castle.—Building is going on at Barnard Castle at the present time with more vigour than for many years past. The Duke of Cleveland has lately agreed to dispose of a portion of land in the Flatts for building purposes, and a line of road has been laid out for the formation of a new street, extending from the Horse Market northwards over the higher side of the Corn Close; and, in fact, forming a continuation of the Horse Market. The contract for the construction of a foot-bridge across the River Tees has been accepted by a Darlington firm.

Bath.—An important improvement is now being effected in the Corridor, Bath, by the construction of a new roof, which will be of iron and glass, the central division being angular, and the end divisions in the shape of a dome. The entrances will each be emphasised by a couple of granite pillars. The alterations are being carried out from the designs of Mr. Goodridge, architect, the contracters being Mr. Francis for the glass work, and Messrs. Sothern and Pitt for the iron and other work.

Bradford. — On Saturday last the corner stone of the new schools in connection with S. Thomas's Church, Cropper-lane, Bradford, was laid by Mrs. F. S. Powell. The schools, which are to accommodate 730 boys, girls, and infants, have been designed by Messrs. Lockwood and Mawson, architects, Bradford, in the Gothic style, and are being erected by Messrs. J. Ives & Son, Shipley. The cost, including the value of the site, will be £3,300.

Cardiff.—At the weekly meeting of the Cardiff Board of Guardians on Saturday last, Mr. Stephens, architect, having completed the alterations required by the Poor Law Board in the plans for the new workhouse, now produced them, and also an amended estimate for bread-room and tramps' block, receiving rooms, &c., amounting to £7,675, an excess of £1,200 on the former estimate. The plans, as amended, were accepted by the Guardians, and are again to be sent to London for the approval of the Poor Law Board.

Edinburgh.—It is now upwards of six years ago since the first stones of the Fettes College, Edinburgh, were laid. We gave an illustration and description of the building at the time (see Building News, Vol. XI., p. 540), and need only say here that the work is now nearly completed. Mr. David Bryce, R.S.A., is the architect. The cost up to the present has been £140,000, and it is estimated that the total cost will be £150,000.

Pickwell.—Extensive works, in addition to and restoration of the Manor House, are being carried out in this village. The works are being executed by Messrs. Halliday and Cave, of Oakham, under the superintendence of Mr. R. W. Johnson, architect, of Melton Mowbray.

Stockport.—At Stockport a new mechanics' institute is being built in Hazel Grove, by Mr. Mr. S. Howard, of Disley, from the designs of his son, Mr. S. Howard, jun. The building is of brick with stone and white brick dressings. The cost is to be over £1,000.

Wakefield.—On Tuesday last the foundation or corner stone of a new school-church was laid at Belle Vue, near Wakefield, in the parish of Sandal Magna, by Mrs. Holdsworth. The new edifice will be situated in a field abutting on the Doncaster-road. The estimated cost is about £1,500. The style will be Gothic. The architect is Mr. Jeckyll, of London.

◆

TO CORRESPONDENTS.

To Our Readers.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

Letters relating to advertisements and the ordinary business of the Paper should be addressed to the EDITOR, 31, TAVISTOCK STREET, COVENT GARDEN, W.C.

Advertisements for the current week must reach the office not later than 5 p.m on Thursday.

Received.—J. D., J. B. F., J. B. and Co., W. and D. P., S. Son and R., W. Warn., W. J. C., T. C. W., J. B. R., J. S., R. M. S., T. H. R.

Jas. Redford.—See Building News, August 12.

R. A. M., Birmingham.—Sketch returned.

W. Y.—The stamps were sent.

D. M.—An American publication.

A. S. Bird.—Instructions forwarded.

Savory and Co.—The parcel came to hand.

S. S. and R.—Photos to hand.

◆

Correspondence.

ANCIENT CROSS.

(*To the Editor of the* Building News.)

Sir,—Your new correspondent, also, is equally silent about the inscription. Will no charitable individual, who has access to the original, enable us to decide upon the letters and language used?

Llantwit Major, in Glamorganshire, the site of the first Christian school of learning in Britain, is one of our most interesting localities; an older Christian settlement than Canterbury itself, and of unequivocal authenticity. Visitors report the existence there of a fragmentary cross to commemorate the founder, S. Iltyd or Iltutus, *circa* 408-502 A.D. Llan-Iltyd has been corrupted to Llantwit; it was, so report says, erected by his pupil and next successor but one, Samson, Archbishop of Dol. A. H.

August 26th, 1870.

ARCHITECTS' CHARGES.

Sir,—Can you or any of your readers enlighten me on the following? I have prepared three sets of designs for detached villas, with a map of the ground showing position of houses, with a preliminary estimate of cost and all particulars; in short, everything which would be necessary to ask builders to estimate. My client being the freeholder of the property, he now informs me that he only wants them to show future lessees what he intends to have built on the property. For the sake of peace I have offered to take 2½ per cent., with the additional understanding that he will not infringe the copyright of the designs. He refuses to comply with either of these offers, and returns me my bill, but not the drawings. As this is not an isolated case, but one of several I have met with in the same district, I shall be glad to know what the law will allow me to charge. It is becoming very much the fashion for men who can well afford to pay to get designs in this way, and then, by bombast and threat, to say they will stand out a lawsuit, and endeavour thereby to blink payment of the same; and in many instances do so, unless the poor architect accepts as a compromise an amount in many instances which barely reaches to mechanics' wages. I should be sorry, further, in this instance to concede anything which might prove an injury to the profession at large, or which, as a young beginner, may be detrimental to my future success.—I am, Sir, &c.,

Young Architect.

WHICH IS THE GROUND STORY OF A HOUSE?

Sir,—Will you kindly allow me to thank the gentlemen who wrote me on the above, all of whom concurred in my view? The case came on before Mr. Dayman, on Friday last, who, before the hearing commenced, intimated that the decision would be against me. During the hearing I drew his Worship's attention to the 23rd section of the Building Act, which refers to underground rooms, and read to him the written opinions of various London and provincial architects. Subsequently the Magistrate contended that I was in error in using the term "floor," and applying to it the same significance as "story," the term used in the Building Act. Mr. Marrable attended to give evidence in support of my view; but was not heard. The case was adjourned to the 7th of October, his Worship having consented to consult the 23rd section, and read the letters. Kindly allow me to inform those gentlemen who wrote me that it is my intention to send a written acknowledgment to each on the letters being returned. Thanking you for your courtesy, —I am, &c. T. E. Knightley,

District Surveyor for Hammersmith.

WINDOW CLEANING.

Sir,—Amongst the numerous inventions applicable to the saving of labour there has not yet appeared one —which is a real necessity—for sparing the lives of women servants. The article needed is a wooden hand and arm, to hold a cloth and move to clean the outside panes of glass in bedroom windows. In the country women servants constantly do this, and sit on the sill holding by the window frame, with the body outside. Can it be difficult to arrange an instrument to work upwards, downwards, and to the right and left, so as to clean the glass and spare the risk of life and limb by the common act of the neat tidy housemaid? The inventor would find remuneration. Every mistress would rejoice to possess what would do the work and spare her from anxiety. Tidy servants never will take warning or obey if ordered not to sit outside of the window.—I am, &c., Isle of Wight.

August 30.

◆

Intercommunication.

QUESTIONS.

[1931] MEASURING BUILDERS' WORK.—Can any reader inform me of a good and inexpensive book giving directions for measuring the various kinds of builders' work? I have Peddie's, but that does not enter into the subject sufficiently.—G. W. W.

[1932] SKETCHING IN TOWER OF LONDON. — I should be glad if some of your readers could inform me by what means I could get an order for sketching in Tower of London.—A. C.

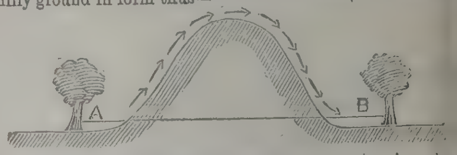
[1933] WHITWORTH SCHOLARSHIPS.—Will some one inform me where I can procure a copy of the examination papers issued to the competitors for the Whitworth scholarships last year? Also where I shall be able to obtain the requisite information regarding the examination to take place next year?—T.

[1934] MALT-HOUSE FLOOR.—Would any correspondent kindly inform me what are the proper materials, and the proportions of the same, to make a thoroughly good malt-house floor?—Pecksniff.

[1935.] GOTHIC ARCHITECTURE.—Will any of your readers inform me of a good book for the study of church architecture, likewise one on Gothic architecture generally, say 13th to 15th century?—Anxious Youth.

[1936] ROAD-MAKING.—Can you or your readers inform me of a good work on road-making and draining of the same, with name of the publisher?—W. P. B.

[1937] MEASURING HILLY GROUND.—I wish to ascertain how the measurements of hilly ground were taken by the persons appointed to make the Tithe-Map and Ordnance Survey. For instance, I purchase a piece of hilly ground in form thus—

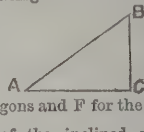


It is sold to me according to the measurements given in the book of contents attached to the Tithe-Map. Are the dimensions taken horizontally, A, B, in order to compute the contents, or, on the other hand, are the dimensions taken on the surface only, as indicated by the arrows.—Subscriber.

REPLIES.

[1913] RETAINING WALLS.—The drawing shows the proper manner in which to lay out the plan of the wall; but it must be borne in mind that the backs of the counterforts or buttresses should not be curved, but laid out at a tangent to the radius of the large circle. This arrangement will simplify the work, and also slightly increase the strength of the wall. The distance between the buttresses should not exceed 15ft., and their breadth or depth, which should be equal to one another, may be obtained by the following simple formula. Let H be the height of the wall, T the thickness at top, and R the ratio of the latter. Putting T^1 for the lateral dimensions of the counterforts, we have $T^1 = T + \frac{RH}{2}$. If any steps are built on the back of the wall, there should also be corresponding ones in the counterforts.—A. M.

[1914] SELF-WORKING GRADIENT. — The first thing to do with respect to this question is to find what



weight would draw the empty waggons up the incline. In the cut, let BAC be the angle of elevation of the incline, let P equal the weight or force necessary to draw up the empty waggons Put W for the weight of the empty waggons and F for the value of friction. Then, by the principle of the inclined plane $\frac{P = W \times BC + F \times AB.}{AB} = \frac{W \times BC}{AB} + F$. But $\frac{BC}{AB}$ equals the sine of angle BAC, equals the sine of angle elevation, so that $P = W \times$ sine BAC + F. Any value will therefore obviously answer for the angle BAC that does not make the value of I greater than the weight of the full waggons. It must no be forgotten that ample allowance must be made for the friction, and also for the want of adhesion in wet weather —Axle.

[1915] EVAPORATION.—The loss of water which i available for the supply of a town, by evaporation, depend upon so many circumstances that it is scarcely possible t reduce it to a general rule. The nature of the subsoil o the gathering grounds and catchment basins very materially affects this result, so much so, that it is difficult t asertain what quantity is lost by evaporation, and wha by percolation. The best way to arrive at an accurate conclusion is to make a short series of experiments in th district in which the intended waterworks are to be erected —Locus.

[1916] FLOORS.—For the information of "Apprentice I give in the accompanying sketch examples of ordinary single and double flooring. In fig. 1, W is the wall plate

FIG. 1

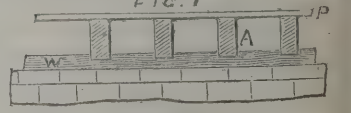
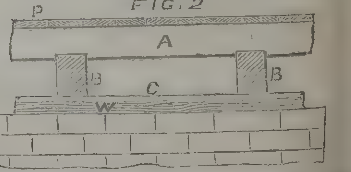


FIG. 2



A the joists, and P the floor boards. In fig. 2 the corr sponding letters represent the same parts; but it wi seen that there are additional joists, B, which are called binders, and which carry the ceiling joists C. Double floors are much stiffer than single ones, and ought to be employed more frequently than they are. But builders and landlords will not pay for extra joists, although they assist in binding the whole building together in a manner which very much contributes to its durability and soundness. A great many cases of failure houses, are owing to the wretched shaky floors laid down which communicate to the walls continual vibrations and shocks. – S. L. B.

[1916] FLOORS.—Single floors are those in which the joists reach from wall to wall; the lower edges of the joists receive the lathings and plasterings of the ceilings, as in fig. 1. Double floors are constructed with stout binding joists placed about 12ft. apart, which support bridging joists for floor and ceiling joists for the ceiling, as in fig. 2.—A. C. Pillar.

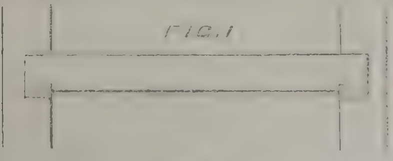


FIG. 1

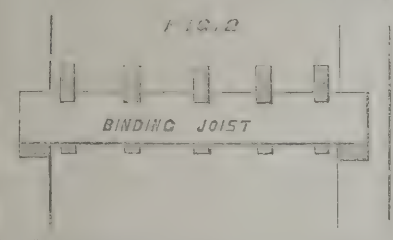


FIG. 2

[1918] STRENGTH OF TIMBER.—In Weale's "Rudiments of the Art of Building," (page 84, article 178), is the following formula for the strength of a beam, in which (*s*) is the transverse strength of the material, (*b*) the breadth, (*d*) the depth, (*l*) the length between the support, and (*w*) the breaking weight. $w = \frac{s\ b\ d^2}{l} = \frac{400 \times 5 \times 13_2}{21} = 16095{\cdot}238$lbs. The above result is the breaking weight of one beam. The beams being set 13in. apart it takes four beams to carry a square of flooring. Multiplying the above result by 4 we get 64380·952 as the breaking weight in pounds of the four beams. But as the safe load to place on a beam should never exceed one-third of the breaking strain, dividing the last result by 3 we obtain 21460·317 as the load which can be carried with safety by the floor, which is a little over 9½ tons per square. Perhaps the annexed extract from the same volume may be of service to "Founder," (1928). At page 88, article 182, the author says:—"In practice it is not desirable to load iron girders beyond one-third of their ultimate strength, and they should be proved before use by loading them to this extent or a little more, but care should be taken never to let the proof exceed one-half the breaking weight, as a greater load than this strains and distresses the metal, making it permanently weaker. The ultimate strength of a girder of the usual proportions may be approximately ascertained from its deflection under proof, on the assumption that a load equal to half the breaking weight will cause a deflection of 1-480th of its length.—Studiora."

[1919.] SMOKY CHIMNEYS.—There are a quantity of superstitions in regard to smoky chimneys; I cannot see that the hole in the chimney would have the desired effect, if you have the down draught from the topmost part you have the same from the hole. If you want currents of air, you must commence from the bottom part, and then you must have your current of cold air to drive your hot air very strong in force to compete with the heavy and foggy atmospheres. But this is no cure for "S. R.'s" chimney. If you want to get at curing smoky chimneys, you must first of all get hold of the disease and then you can apply the proper remedy.—A Chimney Doctor.

[1922.] ARCHITECTS' ASSISTANTS' HOLIDAYS.—All depends upon the agreement. If an assistant engages himself unconditionally at a certain rate per week, "Constant Reader" need not put on his considering-cap to enable him to arrive at the conclusion, that for every week's pay he must work every day. If, however, he is called upon, as in some offices, to render extra services without a fair compensation for the same by his employer, it would be only just to expect a proportionate holiday without any stoppage of wage. It cases of yearly engagement a holiday is generally provided for by a condition in the agreement.—Tee Square.

[1925.] SEWAGE IRRIGATION.—There is at present great diversity of opinion among those experienced in the subject as to what is the proper number of acres of land to take for a given population. Mr. William Hope says that towns with increasing populations to utilise their sewage should purchase one acre for every twenty or twenty-five persons; if stationary, one acre to every forty or forty-five persons, for this latter proportion represents as much sewage as land can either utilise or purify over a term of years. Mr. Baldwin Latham says the sewage of 100 persons may very well be applied to one acre of land. The light loam land is more suitable for sewage irrigation. —A. J. C.

◆

LAND AND BUILDING SOCIETY.

Westward Ho! Villas Company.—The annual meeting of this company was held on Wednesday week at Bideford. The report stated that there was a reserve fund of £1,469, and recommended that the payment of a dividend of 3 per cent. An amendment that no dividend be paid was carried by a large majority.

LEGAL INTELLIGENCE.

Samuel Trickett v. Wedekind.—This was an action in the Lord Mayor's Court for the recovery of the value of a quantity of stone supplied to the defendant. The plaintiff is a stone merchant, carrying on business in Gresham-buildings, and owning extensive quarries near Leeds, and on July 29 last he received an order from the defendant for 500ft. of 2-inch paving stone, at price as per original agreement, which would be 6½d. per foot. The stone was intended for shipment to Hamburgh. On August 3 he received a note from the defendant cancelling the previous order, in consequence of the price for squaring the stone being more than the Hamburgh customer would give. Immediately plaintiff wrote off to his brother, who managed the business at the Leeds quarries, telling him to cancel the order; but his note did not reach its destination until the order had been carried out, and the stone had been already sent to Hull for shipment to Hamburgh. The stone was never returned to plaintiff, and no claim was ever made on him for freight of the goods. A verdict nonsuiting the plaintiff was entered, with power to Mr. Kemp to move the Exchequer Court for a new trial on the ground of misdirection.

Claim for Supply of Cement.—James Wright, proprietor of lime and cement works at Hitchin, Bedfordshire, sued Henry Reddy in the Lord Mayor's Court last week to recover £11 18s., the price of eight tons, containing 110 bags of cement supplied to him so long ago as 1868. The goods were invoiced to Messrs. Chichester Brothers; and the plaintiff, in reply to the Judge, said that a messenger came to their establishment and gave the order for the goods. Defendant did not give the order, and disputed his indebtedness on the ground that the cement was not good in quality. The defendant had the goods sent to his place at Beckenham, in Kent. After an action had been taken against Messrs. Chichester it was discovered that they had never ordered the goods, and they found a letter from Mr. Reddy which he wrote to Mr. Wright, stating that the cement the plaintiff had sent to Beckenham. Messrs. Chichester, of this place, were applied to for payment, and their reply was that Reddy was erecting some buildings on their property, and that it was he who had received the cement. Mr. Reddy, who conducted his own case, denied that he ever ordered the cement or used it. He knew nothing at all of the transaction. Verdict for the plaintiff.

Joiners' Case.—At the Edinburgh Small Debt Court, on Friday last, a case of some interest to joiners was disposed of by Sheriff Hallard. Robert Watson, joiner, Dalry Park-terrace, sued William Brown, house carpenter, Charlotte Square-lane, for 8s. 6d., which he alleged to be due to him for work done for the defender on 16th and 17th June. The defence was that the pursuer left his employment without giving warning; and that this was contrary to the practice of the trade. Several witnesses were called, who spoke as to the rule of the trade regarding warning. Their depositions were to the effect that, after getting his first pay, a workman was entitled to receive from his master, and to give to him, a week's warning, in the event of either party being dissatisfied; but that before getting his first pay a workman could leave or be dismissed without that notice. The sheriff held it proved that up to the first pay master and servant were upon mutual trial; and that if the employer thought the workman incompetent, or if the workman considered the employer severe or disagreeable, they could part company without warning. He found for the pursuer, with expenses.

◆

WATER SUPPLY AND SANITARY MATTERS.

Banbury.—The *Bicester Herald* states that on the Banbury Board of Health Farm a little over six acres of rye grass, grown under the influence of the refuse of the town, sold for £57 10s., or at an average of £9 10s. 6d. an acre. This does not seem very much money in comparison with the sums realized off sewage meadows in the vicinity of Edinburgh, where at the rate of from £30 to £40 an acre is often, indeed, it may be said, annually, realised. But the amount signifies little comparatively. That which is gratifying in the paragraph is the fact that loathsome and poisonous matters have been robbed of their noxiousness, and made profitable to the community. Besides the rye grass, there were raised on the farm sixteen acres of oats, which at a public sale were sold at an average of £16 per acre.

Hornsey.—The Hornsey Local Board of Health has at length, and after much negotiation, succeeded in making arrangements with the Board of Works for the sewage of Hornsey, which now flows into the River Lea, to be carried into the northern high level sewer.

Merthyr.—The Merthyr Local Board of Health having obtained their Bill for carrying out their surveyor's proposed scheme of irrigation, steps will be immediately taken to borrow a sufficient sum for carrying out the same; something like £30,000 will be required.

Neath.—The Neath Sewers Committee have accepted the tender of Mr. Cribb for the new drainage works proposed to be carried out in that town.

Newent.—The question of dealing with the sewage of this town and district is at length virtually settled. A committee has been unanimously agreed to by a very large meeting, duly convened by legal notice last week. The whole parish is to be formed into a drainage district.

Ottery S. Mary.—The Ottery S. Mary Local Board have determined, on the strong representation of the inhabitants, to give a better water supply to the upper part of the town, and Mr. Norrington, the surveyor to the board, is entrusted with the survey, estimates, &c.

Purification of the Rivers Aire and Calder.—On Tuesday a conference of the representatives of local authorities of towns on the rivers Aire and Calder was held at Leeds, "for the purpose of considering what measures it is most advisable to adopt for the purpose of enforcing the purification of the rivers Aire and Calder, and the suspension of legal proceedings for a sufficient period to effect the necessary measures for doing so." It was resolved "That inasmuch as the Government have not taken any measure for the general conservancy of the rivers Aire and Calder, and great pressure having been put on the local authorities in the watersheds of those rivers by proceedings in Chancery and otherwise, this meeting is of opinion that some measure should be introduced into Parliament in the ensuing session on behalf of the local authorities of all the boroughs and districts within the watersheds of the Aire and Calder, to deal with the whole question of defecating the sewage of such places, and of purifying the streams and rivers of those watersheds, due regard being had to the important manufacturing and other interests thereby affected." It was also resolved, "That a committee be appointed to consider and report as to the best mode of giving effect to the preceding resolution, and that this meeting be adjourned to the 8th October to receive their report."

Reigate.—Considerable progress has been made with the irrigation works for the Reigate sewage. Mr. Baldwin Latham is the engineer for the works, and in his last report to the Reigate Town Council says that great progress has been made in preparing Earlswood Common for the reception of the sewage of the district, and with the erection of buildings and sewage extractors. Work to the value of £1,650 has been done, and Mr. Latham has certified for £1,310 to be paid to Mr. Hayward, the contractor. The sanitary committee have approved the designs of Mr. Latham for the outfall sewers, and have directed application to be made to the Secretary of State for his consent to borrow £13,000 to carry out the works.

Taunton.—The Taunton Board of Health is in a "fix." The whole of the sewage discharges into the Tone, and for a mile in length the river has the appearance of an elongated cesspool. Various plans have been discussed for deodorising the sewage to make profitable manure, but hitherto nothing has been done. The affair culminated on Thursday week, when Captain Beadon (who owns the fishery of the river, and has houses on its bounds) gave notice that unless the Board remedies the nuisance within a fortnight he will apply to the Court of Chancery for an injunction to restrain the Board from sending any sewage into the river.

The London Water Supply.—Mr. Ormsby, C.E., has written a long letter to a daily contemporary respecting the water supply of London. He points out that although there is plenty of water for common use in London, the source from which that supply is derived is so corrupted with unavoidable filth as to make it unfit for human consumption; and it is therefore necessary to overcome this difficulty by the discovery of an analytically-pure source of supply. It appears that 100,000,000 gallons of water are consumed daily for all purposes, and, as the utmost that is required for drinking and cooking is 6,000,000 gallons per day, it is evident that if all the water that is used in London is to be filtered, it will be necessary to filter 94,000,000 gallons per diem more than is required, as well as to commit the absurdity of applying this filtered water to the purpose of flushing sewers, serving water-closets, watering streets, &c. Mr. Ormsby discusses at great length the report of the Royal Commissioners on this subject, and advocates the adoption of the Salisbury Plain project, believing it to be the best that can be adopted.

Lord Derby on Sanitary Reform.—Lord Derby last week laid the foundation stone of a new hospital at the rising town of Bootle and in an admirable speech dwelt on the, to a great extent, preventible causes which necessitated the establishment of such institutions. Among such causes he prominently classed our sanitary deficiencies. "In sanitary matters, at least," said the noble lord, "the future of the world need not be like its past; for the worst of the material evils that beset us, the cause is not in the arrangements of nature, but in ourselves; and remembering that this is the age of great towns, and knowing what are, in a sanitary and moral point of view, the defects and the difficulties of great towns; and bearing in mind, what I am afraid there is no doubt of, that an urban population not recruited from the country cannot keep life permanently in itself, but tends inevitably to decay and die out—considering all these things, I say, you will be at no loss to see what our business is, and to some extent to see how it is to be done. We want here broad streets, good drainage, plenty of light and plenty of air. These are the first requirements, and for so much I will undertake to answer, so far as my interest in Bootle is concerned. But we want more. We want good and cleanly houses for our working men: we want baths and washhouses; we want places of healthy exercise for those whose labour is sedentary; we want places of rest and harmless amusement for all when their labour is done These things must be everybody's concern; and as Bootle is about the youngest borough in England, I hope it will do what youth always thinks it can do—show itself a great deal wiser and more energetic than its elders. One thing we have to remember—in theory we all know it, but in practice we are too apt to forget it—that the true wealth of a state is not shown in the lists of its exports and imports, nor in a vast revenue easily raised, nor in its enormous yearly savings, of which our statistical writers boast. All these things are excellent in their way; but excellent as they are, they are means, not ends; and the end of them all is, that we should have living on this English soil a population not squalid in dirt, not decimated by disease, but healthy in body and mind, trained for all needful purposes, whether of peace or war, living in homes which make self-respect possible, and attached to a country which has done its duty towards them." If every wealthy landlord laid to heart (as Lord Derby has done) the maxim that wealth has its duties as well as its privileges, what might not be effected in the way of social reform? Class feelings would no longer rankle in the breasts of working men, nor would the upper classes be contemptuously spoken of as "a bloated aristocracy."

◆

STAINED GLASS.

Barnard Castle.—A stained glass window has just been placed in the south transept of the parish church of Barnard Castle to the memory of the late Canon Dugard, vicar. The subjects of the window are "Christ giving his charge to Peter," and the "Good Samaritan." The work is by Mr. Baguley, of Pilgrim-street, Newcastle-upon-Tyne.

Steyning.—The west window of the fine old church at Steyning, Sussex, has just been filled with stained glass, erected as a memorial to the late Dr. Ingram. The design of the stonework, an Early English window of two lights with quatrefoil head well proportioned to the massive tower in which it is placed, is the work of Mr. Gordon Hills, Messrs. Hardman being intrusted with the design in stained glass, which consists of two large-sized medallions containing subjects in rich colours set in a ground of grisaille glass with coloured borders. The subjects illustrated are "Christ blessing little Children," and "The Good Samaritan."

◆

STATUES, MEMORIALS, ETC.

Edinburgh.—The Prince Consort Memorial, Edinburgh, is now, so far at least as the sculptor is concerned, approaching completion. The design selected for the memorial was one of three submitted in public competition by Mr. John Steell, R.S.A. It consists of what may be generally described as a great pedestal, supporting a colossal equestrian statue of the Prince, and itself enriched with bas-reliefs and subsidiary groups of statuary. The structure, oblong in ground plan, is formed in three stages. The first of these, which presents faces of plain masonry about 4ft. in height, has at each angle a square projection, designed to support a group of figures. Over this rises the second stage, which is to have its sides covered with quotations from Prince Albert's published speeches. The third stage, or pedestal proper, is richly moulded, and exhibits on each side a bas-relief in bronze illustrative of the Prince's tastes, or of leading events in his life. Under the centre of each bas-relief a group of emblematic objects, suggestive of the Prince's honours and pursuits, will rest on the ledge formed by the projection of the second stage beyond the base of the third. The groups of statuary for which places are provided on the first stage are designed to represent people of all classes in the act of approaching the Prince with looks and gestures of reverence and affection. In accordance with Mr. Steell's wish, the execution of these subsidiary groups was entrusted to other Edinburgh sculptors. That representing the Aristocracy was undertaken by Mr. Brodie. The figures standing for the Army and Navy were assigned to Mr. Clark Stanton. The late Mr. M'Callum took the group representing Labour; but after accomplishing the greater part of his task, left it to be finished by Mr. Stevenson, who had also allotted to him the figures intended to denote Science and Literature. Of the four groups, only the one last mentioned now remains to be completed, and that we (*Scotsman*) believe, is nearly ready for casting. Some delay has taken place in respect to the pedestal, in consequence of the resolution adopted about a year ago to substitute Peterhead granite for freestone. This granite will be supplied by Messrs. McDonald and Leslie, Aberdeen. It will, however, require nearly twelve months to execute the commission for granite work after the order shall have been given.

Loughborough.—A new drinking fountain, the gift of the Ven. Archdeacon Fearon, is in course of erection in the Market-place, Loughborough, by Mr. Hall.

◆

Our Office Table.

The South London Tramways.—The following is the method adopted in the construction of the tramways of South London :—A trench is first dug in the centre of the public carriage-way, ten feet broad and two feet deep. The bed is paved with old bricks closely packed together, and covered with concrete one foot six inches in thickness. Upon the solid mass are placed iron shoes four feet apart, which receive quarterings of yellow deal, six inches deep, four inches broad, and twelve feet in length. These are kept five feet apart by iron bars, which drop transversely into sockets prepared for their reception in the shoes. Upon the quarterings are laid the iron tramway, four inches in breadth, in which is a groove to receive the small wheels, by which the carriage wheels are regulated. The inner half of these trams is corrugated, and affords a bite for the revolving wheels. The interstices are filled in by blocks of granite six inches square, set in with concrete, and which, when complete, form a level and compact road of great durability.

Science and Art Department.—The results of the late examinations in drawing held by the Science and Art Department are as follows :—As respects schools for the children of the labouring poor—In 1,376 schools examined, 98,544 children and pupil-teachers worked 114,964 exercises, being an increase on the numbers examined in 1869 of 282 schools, 16,093 children and pupil-teachers, and 19,750 exercises. As respects schools of art and art night classes—In 394 schools examined, 16,361 students worked 24,370 second grade exercises ; an increase of 91 schools, 3,587 students, and 4,330 papers. From 347 schools of art, night classes, and science classes ,13,660 students submitted to the Department for examination 90,889 drawings, executed in the ordinary course of the year's study, being an increase of 126 schools and classes, 3,735 students, and 25,440 drawings. In 1869, 75 candidates were examined for the third grade, or art master's certificate. These worked 302 exercises, and 25 candidates were successful. In February last 78 candidates, who worked 316 exercises, were examined, and 27 succeeded in obtaining the certificate. Finally, the total number of schools examined in drawing this year is 1,842, and of candidates 128,643, by whom 230,269 works and exercises were executed ; showing a total increase in twelve months of 404 schools examined, 23,418 candidates, and 49,534 works and exercises. In the last three years there has been a total increase of 1,146 schools, 76,412 candidates examined, and 160,867 worked exercises.

Thames Embankment (North) Approaches.—Useful and necessary as it may be to open communications between the streets running south from the Strand to the Victoria Embankment, we (*Globe*) are unable to join in the opinion that this improvement would bring the magnificent carriage-way by the Thames into use, and relieve the Strand. The necessity is a broad road branching obliquely from the neighbourhood of Charing Cross to the Embankment. Such a way might be opened from the eastern extremity of the Charing Cross railway station, nearly in the line from the upper side of Trafalgar-square (by the side of S. Martin's church) to the Strand. The property to be taken on the south of the Strand is not of great value, and does not include the destruction of any public building of great importance. [Our contemporary does not take cognisance of the fact that it is at the *east*, and not at the west end of the Embankment that an approach is wanted to render it available for much traffic. That approach (viz., the new street from the Mansion House) is in course of construction, and will be the main feeder of traffic to the Embankment. To make the approach what it should be at Charing Cross, a roadway should be constructed directly opposite the Nelson column, but this would necessitate the complete or partial demolition of Northumberland House. As it is, we think that the continuation of Whitehall-place to the Embankment will afford a tolerably direct outlet from the Embankment to Charing Cross, though not so good a one as that suggested by the *Globe*. But however complete the western approaches may be made, comparatively little traffic will run along the Embankment until the City approach is completed.]

Alleged Oil-Spring in London.—At the last meeting of the Hackney District Board of Works, Dr. Tripe, the medical officer of the district, reported that he had visited a factory belonging to a Mr. Barnes, at Hackney-wick, where there was a furnace fitted up for burning "dead oil"—that is to say, an oil which is given off during the latter stages of the distillation of gas-tar. The The oil, however, burnt at Mr. Barnes's works he discovered was not "dead oil," but a similar product, which is pumped with water from a deep well in the factory, and resembled impure rock-oil. He believed it was the only instance of a natural oil-spring in England.

Dover Harbour.—The Dover Harbour Board intend to deepen the harbour, and improve the vessel accommodation, at a cost of £80,000. Messrs. Lee & Sons, the contractors for the Admiralty Pier, have been making the necessary surveys, with the view of obtaining the order for executing the work.

Fall of Buildings at Manchester and Jarrow.—About 9 o'clock on Monday morning, the greater portion of two houses and shops in Market-street, Manchester, fell. Some time ago the premises were condemned by the City Surveyor as insecure, in consequence of which the owner had commenced making alterations. The front wall of the upper stories had been removed, and the owner's intention was to replace the shop windows. From some cause the whole of the front floors, from roof to basement, gave way on Monday. Fortunately no workman were engaged about the building at the time of the accident. Later in the afternoon another portion of the premises fell. On the same day, two large chimneys at the west end of the chemical works lately occupied by Mr. T. J. Nixon, of Jarrow, suddenly fell down with a loud crash, and carried with them the entire ends of two large sheds, considerable portions of the roofs, and several yards length of the boundary wall. Fortunately, there were no persons in the vicinity at the time.

◆

Chips.

The new theatre in the Strand (described in last week's Building News) is to be named the "Opera Comique."

The church of S. Ethelburga, Bishopsgate-street, is closed for further "restoration."

The church of S. Michael, Cornhill, will be closed for two Sundays, to allow of the construction of ventilators and other works.

The foundation stone of the new music hall at Sheffield was laid yesterday (Thursday).

Mr. Ernest Hart, well known as a sanitary reformer, has been appointed editor of the *British Medical Journal.*

Another race-stand accident took place at Leicester, on Monday week, and several people were severely injured.

Great alterations and additions are to be made to Zion chapel, Boston. Messrs. Broughton and Sherwin's contract has been accepted for the proposed works.

The Corn Exchange, Lincoln, has recently been repainted and decorated by Messrs. Morgan and Waller.

A local journal says that the lowest tender for the erection of the new church of S. Martin, Lincoln, is £2,000 above the architect's estimate. The committee intend to fall back on the other plans from which they originally selected.

The new Corn Exchange at Chatteris was opened on the 19th ult.

The Rochester and Chatham Gas Company have resolved to reduce the price of gas supplied by them from 4s. to 3s. 6d. per thousand feet at the end of the year.

A new organ (by Messrs. Walker and Sons, of London) has just been placed in Feering parish church, Essex, at a cost of £350.

The enlargement of S. Peter's Church, Folkestone, is so far accomplished that the building was reopened yesterday (Thursday).

On Tuesday last the memorial stones of a new Primitive Methodist chapel were laid at Derby The total outlay will be £4,000.

A new Protestant church at Killarney was consecrated last week.

A street tramway from the Liverpool Exchange to Spellow-lane, Walton, was opened yesterday (Thursday).

A great number of buildings are at present in course of demolition at Liverpool, to make room for the new station for the Manchester and Sheffield, Great Northern, and Midland Railways.

The foundation stone of a new Wesleyan chape was laid on Tuesday last at Coxhoe.

Mr. Joseph Dodds, M.P., on Tuesday last laid the foundation stone of a Sunday school for the Cleveland Wesleyan chapel, South Stockton.

The building of the art schools which are to be erected in connection with the London University College, in conformity with the provisions of the Slade bequest, is to be proceeded with without delay.

At a meeting of the gas consumers of Market Drayton, held last week, it was resolved, "That the Market Drayton Gas Company be solicited to reduce the price of gas to 4s. 6d. per thousand feet, and should they refuse, this meeting pledges itself to discontinue the use of their gas at Michaelmas next."

Mr. Rollaston has been re-elected surveyor to the Assessment Committee of the West Bromwich Board of Guardians, at a salary of £90 per annum.

The buildings of the Newcastle Improved Dwellings Company (Limited), near the New-road, are now rapidly approaching completion, and it is stated that the applications for tenancies from every grade of the working classes are already very numerous.

From Canada we learn that extensive fires have been raging in the woods around Ottawa.

The parishioners of Speen, Berks, are about to rebuild the tower of their church, at a cost of £1,200.

There is a talk of making Leicester-square a flower market. A more desirable change could not take place; and Covent-garden, which has long suffered from repletion under a badly arranged system, would find no little benefit from such an establishment as is now proposed.

A circular letter has been addressed to the Lords Lieutenants of counties, asking them to obtain for the International Exhibition of 1871 specimens of any varieties of earthenware that may be produced in the Highlands to meet a local demand. Many of these, though of the commonest kind, have often (says an Inverness paper) a character and interest peculiarly original.

It is probable that the Prince of Wales will lay the foundation stone of the new Royal Infirmary, Edinburgh, in October.

The death is announced of Mr. George Baird, of Strichen, at the age of 60 years. Mr. Baird was a member of the well-known firm of W. Baird & Co., ironmasters, reputed to be one of the largest concerns of the kind in the world, the principal works being at Gartsherrie and in Ayrshire.

A new cottage hospital at Stanley, near Wakefield, has been formally opened for the reception of patients. The building cost £550, a great part of which was contributed by working people.

Mr. Peter Thomas, a member of the Sheerness Local Board of Health, has, upon receiving a lawyer's letter from Mr. J. Lund, the late surveyor to the board, apologised for making use of language detrimental to that gentleman's character.

The Local Government Act has been adopted for the Tunbridge New District, and a local board of eighteen members is to be elected.

The foundation stone of the new Corn Exchange at Doncaster will be laid on the 22nd inst.

Timber Trade Review.

◆

Messrs. Churchill & Sim's sale on August 31 consisted of
45,000 Spruce deals, &c.
80,000 Quebec pine deals, &c.
29,000 Petersburg, Archangel, and Oneza do.
89,000 Swedish deals and battens
25,000 Norway deals and battens
80,000 Finland deals and battens
3,500 Pitch pine planks
170,000 Prepared flooring and match boards
400 Loads Swedish balks
230 ,, Quebec walnut
54 ,, Quebec birch
540 ,, Picton birch
350 ,, Quebec elm
80 ,, Quebec ash
270 ,, Quebec yellow and red pine
1,000 ,, Dantzig fir timber
500 ,, Swedish fir timber
600 ,, Memel fir timber, &c., &c.,
with hickory, mouldings, palings, laths, whitewood timber. Below are given the prices realised at the sale :—

	Per	£ s.		£ s.
Archangel 1st yellow 3 × 9	Petg. std.	12 15		
Do. 2nd do. 3 × 9	do.	9 10		
Bjorneborg yellow 2½ × 7	do.	7 0		
Do. white 2½ × 7	do.	6 5		
Calmar lathwood 6ft.	cub. fthm.	4 5		Bought in
Christinestadt white	Petg. std.	7 0	to	7 10
Christiana spars 4 to 6in.	foot run	1⅛d.		
		£ s.		£ s.
Do. 2nd yellow 2½ × 6½	120 12ft.	7 0		
Do. 1st white 3 × 9	do.	13 5	,,	15 15
Do. 2nd do. 3 × 9	do.	12 15	,,	13 0
Do. 3rd do. 3 × 9	do.	11 15	,,	12 0
Dram 2nd yellow 2½ × 6½	do.	6 15		
Do. 3rd do. 2½ × 6½	do.	6 0	,,	6 10
Do. 3rd white 2½ × 6½	do.	5 5		
Gefle mixed yellow 3 × 9 & 11	Petg. std.	11 15	,,	12 5
Do. 2½ × 9	do.	10 0		
Do. 3 & 2½ × 7	do.	9 5		
Do. 2in.	do.	8 10	,,	9 15
Do. 1½in.	do.	7 10		
Do. 1¼in.	do.	7 5	,,	7 10
Do. 1in.	do.	5 0	,,	7 0
Do. 3rd yellow 3 × 11 & 9	do.	9 10	,,	10 0
Do. 2in.	do.	7 10	,,	8 0
Do. 1 to 1¾in.	do.	4 15	,,	7 0
Georgia pitch pine 4in.	Petg. std.	12 10		
Do. 3in.	do.	12 10	,,	12 15
Gamla Carleby mixed yellow 3 × 11	do.	9 0	,,	9 10
Do. 3 × 9	do.	9 0		
Do. 2½ × 7	do.	8 15		
Do. 3 × 7	do.	8 5		
Gothenburg mixed yellow 4 × 9	do.	9 5		
Do. 3rd yellow 4 × 9 & 6	do.	7 10	,,	9 0
Do. 3rd white 4 × 9	do.	6 15		
Hirdikswall mixed yellow 4 × 9 & 11	do.	9 10		
Do. 3rd yellow 3 × 11	do.	9 0		
Do. 3 × 9	do.	8 15		
Do. 2½ × 7	do.	8 0		
Do. 3 × 7	do,	7 10		
Do. mixed white	do.	7 5	,,	8 5
Do. 3rd white	do.	6 10	,,	7 15
Kragero mixed white	do.	6 0	,,	6 15
Do. 3rd white	do.	5 10	,,	6 5
Do. mixed yellow	do.	8 0		
Do. 3rd yellow	do.	6 10	,,	6 15
Ny Carleby mixed yellow	do.	7 0	,,	9 0
Do. mixed white	do.	6 15	,,	7 15
Do. lathwood	cub. fthm.	3 5		
Onega 1st yellow	Petg. std.	14 5	,,	14 15
Do. 2nd do.	do.	10 10		
Petersburg 1st yellow 3 × 11	do.	12 0		
Do. 3 × 9	do.	11 5		
Do. 3 × 7	do.	11 0		
Do. 2½ × 7	do.	11 5		
Do. 1st white 3 × 9	do.	8 10	,,	9 10
Do. 3 & 2¼ × 7	do.	8 0	,,	8 10
Do, 3 × 11	do.	10 0		
Do. 2nd white 3 × 11	do.	8 0		
Do. lathwood 8ft.	cub. fthm.	5 10	,,	6 0
Pugwash spruce	120 12, 3 × 9	10 10	,,	11 15
Pictou birch 16in & up.	load	£3	to	£3 12s. 6d.
		£ s.		£ s.
Do. Hemlock lathwood.	cub. fthm.	2 15		
Quebec 1st bright pine 12ft. 3 × 11	Petg. std.	19 10		
Do. 1st floated 12ft 3 × 11	do.	16 0	to	16 5
Do. 1st dry floated 12ft. 3 × 11	do.	17 0		
Do. 2nd bright 12ft. 3 × 11	do.	13 10		
Do. 2nd floated 12ft. 3 × 11	do.	12 0	,,	12 10
Do. 2nd dry floated 12ft. 3 × 11	do.	12 5	,,	12 10
Do. 3rd bright 12ft. 3 × 11	do.	9 0	,,	9 5
Do. 3rd floated 12ft. 3 × 11	do.	9 0		
Do. 3rd dry floated 12ft. 3 × 11	do.	9 10		
		s. d.		s. d.
Do. walnut	foot cube	2 0	to	4 0
		£ s. d.		
Do. wainscot logs	18ft. cube	2 10 0		
Do. Birch 6in. & up.	load	4 2 6		
Do. hickory	do.	5 7 6		
Do red pine	do.	3 5 0		
Do. yellow pine	do.	3 17 6	to	£4
Do board do.	do.	3 12 6		
Do. elm	do.	Bought in		
Do. ash	do.	do.		
		£ s.		£ s.
Do. 1st spruce 12 to 14ft.	120 12, 3 × 9	17 10		
Do. 2nd do. 12ft.	do.	14 5	to	14 15
Do. 3rd do. 10ft.	do.	12 5		
Richibucto do.	do.	11 15	,,	14 0
Riga lathwood	cub. fthm.	4 5		
St. John's spruce	120 12, 3 × 9	12 15	,,	13 0
Swartwick mixed yellow 4 × 9,	Petg. std.	10 5	,,	10 10
Do. 3 × 9	do.	10 15		
Do. 3 × 7	do.	9 0		
Do. 3 × 8	do.	8 15		
Do. 3rd yellow 4 × 9	do.	9 10		
Do. 3 × 9 & 3 × 11	do.	9 10		
Do. 3 × 7	do.	8 0		
Do. 3 × 8	do.	7 15		
Sundswall mixed yellow 4 × 9	do.	9 10		
Do. yellow balks	load	1 17		
Soderham mixed yellow 2½ × 7	Petg. std.	8 5	,,	8 10
Stockviken mixed yellow	do.	8 5	,,	8 10
Do. 3rd do.	do.	7 10	,,	8 10
Do. 4th do.	do.	7 10	,,	8 0
Do. 3rd white	do.	5 15	,,	7 5
Do. mixed do.	do.	7 10	,,	8 0
Do. 4th do.	do.	6 15	,,	7 0
Skelleftea mixed yellow	do.	7 15	,,	8 0
Do. 3rd do.	do.	7 15	,,	8 0
Do. 4th do.	do.	7 15		
Do. mixed white	do.	7 15		
Do yellow balks	load	1 14	,,	1 16
Tonsberg white	Petg. std.	5 15	,,	6 5
Trois pistoles 1st pine	do.	14 10	,,	19 5
Do. 2nd pine	do.	9 0	,,	11 15
Do. 3rd pine	do.	7 15	,,	8 10
Do. 1st spruce	120 12, 3 × 9	12 10	,,	16 5
Do. 2nd spruce	do.	11 15	,,	14 5
Do. 3rd spruce	do.	12 5	,,	12 15
Uleaborg 1st yellow	Petg. std.	8 5	,,	9 0
Wyburg 1st yellow 3 × 11	do.	Bought in at 9 10		
Do. 3 × 9	do.	9 10	,,	10 0
Do. 3 × 7	do.	9 10	,,	10 0
Do. 2½ × 7	do.	10 5		
Wifsta wharf yellow balks	load.	2 0		
Do. fir timber	do.	2 0	,,	2 6

[Prepared Flooring.]

		s. d.		s. d.
Fredrickstad 1st yellow flooring 1½in.	squ.	12 6	to	14 0
Do. ⅞in.	do.	8 6		
Do. ¾in.	do.	7 6		
Do. 2nd yellow do. 1¼in.	do.	10 0		
Do. 1in.	do.	8 9		
Do. ⅞in.	do.	7 0		
Do. ¾in.	do.	6 9		

The Dantzig and Memel timber found no purchasers, and was bought in.

THE AMERICAN TIMBER TRADE.—The North American timber trade has fallen off very considerably this season, the majority of the fleet, which have arrived in this country on their first voyages, having been unable to obtain remunerative freights for the return trips. This is owing to the scarcity of timber at Quebec, the rafts from the interior not having arrived in consequence of the ice being long in breaking up. A fleet of 138 vessels, representing almost as many thousand tons, was, a short time ago, on turn for loading, which had a tendency to reduce the freights. In consequence of this, it was feared a number of fine ships would have to be dismantled for the season. At this juncture, however, freights to and from the Baltic rose considerably, and already large consignments of coal are being shipped by vessels of all classes from 50 to 1,000 tons register, Elsinore and Cronstadt, for orders being the general stipulation in their charters.

◆

LATEST PRICES OF MATERIALS USED IN CONSTRUCTION.

TIMBER.

Teak ....load	£13 0	13 10
Quebec, red pine	3 15	4 15
,, yellow pine	4 0	4 15
St. John N.B. yellow	0 0	0 0
Quebec Oak, white	6 0	6 10
,, birch	3 15	5 0
,, elm	4 5	5 5
Dantzic oak	5 0	6 10
,, fir	3 0	4 10
Memel fir	3 0	4 0
Riga	3 0	4 0
Swedish	2 10	3 0
Masts, Quebec red pine	3 15	5 5
,, yellow pine	3 15	5 5
Lathwood, Dantzic, fm	3 15	5 10
,, St. Petersburg	5 10	6 10
Deals, pr C., 12 ft. by 3 by 9 in.,		
Quebec, white spruce	12 10	18 0
St. John, white spruce	12 10	14 0
Yellow pine, per reduced C.		
Canada, 1st quality	16 10	18 0
2nd do.	12 0	12 10
Archangel, yellow	11 10	13 0
St. Petersburg, yel.	11 10	13 0

Finland	£7 0	£8 0
Memel	7 0	9 0
Gothenburg, yellow	9 0	11 0
,, white	8 0	9 0
Gefle, yellow	10 5	12 10
Soderham	8 10	12 0
Christiania, per C., 12 ft. by 3 by 9 in. yellow	10 0	12 10
Flooring boards, per sq. of 1in., first yel	7 6	10 6
First white	7 0	9 6
Second qualities	6 6	7 6
PUMICE STONE pr ton	6 0	8 0
OILS, &c.		
Seal, pale....per tun	37 0	0 0
Sperm body	83 0	84 0
Cod	40 0	0 0
Whale, Sth. Sea, pale	36 10	37 0
Olive, Gallipoli	50 0	0 0
Cocoanut, Cochin, ton	43 10	0 0
Palm, fine	39 0	0 0
Linseed	29 10	0 0
Rapeseed, Eng. pale	44 0	0 0
Cottonseed	28 0	34 0

METALS.

LEAD —

Pig, Foreign	per ton	£18 15 0	£19 0 0
,, English W.B.	do	20 5 0	20 15 0
,, Lead Co.	do	20 5 0	20 15 0
,, Other brands	do	19 10 0	20 0 0
Sheet Milled	do	20 10 0	21 0 0
Shot, Patent	do	22 0 0	23 0 0
Red or Minium	do	19 15 0	20 10 0
Litharge, W.B.	do	0 0 0	0 0 0
White Dry	do	30 0 0	0 0 0
,, ground in oil	do	0 0 0	0 0 0

COPPER :—

British—Cake and Ingot	per ton	£70 0 0	71 0 0
Best Selected	do	71 0 0	72 0 0
Sheet	do	74 0 0	76 0 0
Bottoms	do	78 0 0	0 0 0
Australian	do	70 0 0	72 0 0
Spanish Cake	do	0 0 0	0 0 0
Chili Bars	cash	63 0 0	64 10 0
,, refined ingot		6[illegible] 0 0	72 0 0
Metal Sheathing and Rods	per lb.	0 0 6⅝	0 0 6¾

◆

Trade News

◆

WAGES MOVEMENT.

DUNDEE.—STRIKE OF CARPENTERS.—The carpenters employed by Messrs. Alexander Stephen & Sons, shipbuilders, Dundee, struck work on Friday last for an advance of wages. They have for some time back been paid at the rate of £1 per week. Work, especially in the yard of Messrs. Stephen, has been plentiful for some time. The carpenters, thinking this a proper time to agitate for an increase of wages, held a meeting on Thursday week, at which it was resolved to ask an increase of 3s. per week on their present wages. A deputation was appointed to wait on Messrs. Stephen, and lay before them the claims of the men. This was done and the answer returned being unfavourable, the men, to the number of 150, immediately left work. About a dozen of the apprentices have since been arrested on a charge of having intimidated a carpenter named Robertson, who had returned to his work on the old terms.

MANCHESTER.—At a meeting of the Manchester Carpenters' and Joiners Arbitration Board on Monday night, the following resolution was decided upon :—"Resolved—That the practice (that has been adopted by some employers) be discontinued in the future, of the foremen stating to workmen applying for jobs that they are only paying a certain rate of wages, that rate of wages being below the standard of the town, and that after October 1st, strangers be paid at the rate of 7d. per hour the first week, and 7¼d. at the end of the second week, if proved to be average skilled workmen; with workmen who are not of average skill, the wages to be a matter of bargain between the employer and the workman."

THE SHORT TIME MOVEMENT IN THE BUILDING TRADES.—On Thursday week a public meeting of carpenters, joiners, and others engaged in the building trades was held in the Hall of Science, Old-street, St. Luke's, for the purpose of submitting a code of working rules, limiting the hours of labour in the trade; Mr. St. Clare occupied the chair. The chairman said that during the last eight months a number of district meetings had been held in the metropolis, and the position of the trade discussed. A committee of delegates was appointed, and they came to the conclusion that nothing but a limitation of the hours of labour would benefit the trade. A code of working rules was decided upon, which the delegates hoped would be mutually binding on both the employer and the employed. He contended that a code of working rules was highly necessary to keep the trade alive, and improve the position of the members. The code limited the working hours to nine per day, at 8d. per hour. It might he said that the reduction of the working hours would reduce a man's wages at the end of the week. That might be so, but a reduction of the hours to fifty per week would give employment to a vast amount of unemployed members of the trade. To prevent strikes and lock-outs there was a clause in the rules providing for the settlement of all disputes between masters and men by arbitration. Mr. Haroy said if they did not get a code of rules of some sort the position of the workmen would become worse. If the men were united no impediment would stand in the way of their improvement. He maintained that if the working classes were united, like the middle and upper classes, they would not be in their present degraded position. Mr. Crawford then read the proposed rules at length. Mr. Davis moved a resolution setting forth that the moral and social condition of the workmen would be best secured by reducing the hours of labour, and pledging the meeting to a code of rules which would give the trade 8½d. per hour. Mr. Cookson, Mr. Shield, Mr. Rombold, Mr. Dunn, and others addressed the meeting, and it was decided that the code of rules drawn up by the delegates should be adopted, Mr. Davis's resolution being negatived. A vote of thanks to the chairman closed the meeting.

◆

TENDERS.

BAKER-STREET, W.—For alterations and additions at No. 18, Baker-street, for Mr. J. Taylor. Mr. W. Seckham Witherington, architect, 135, Cheapside, and Worcester:—

Marks	£260 0 0
Elkington	260 0 0
Robertson	255 17 0
Bamford (accepted)	227 10 0

BARNSLEY.—For the completion of the Queen Hotel, in Barnsley, for Mr. James Fox. Wade & Turner, architects. Quantities supplied :—

Walton & Lawton, masonry and excavating	£2050
Goodyear, carpenters' and joiners' work	849
Brown, plumbing and glazing	368
Brown, slating	73
T. & J. Shaw, plastering	290
Stephenson & Charlesworth, painting	41
	£3671

Tenders received for the whole.

Nicholson & Son	£4370
Robinson & Son	4020

BASINGSTOKE.—For additions and alterations to "Eastlands," Basingstoke, for Mr. Alderman Wallis. Mr. G. B. Mussellwhite, architect. Quantities supplied :—

Budden	£836 0 0
Pelham & Tigwell	797 7 9
Mussellwhite & Son	755 10 0
Pistell	748 18 0
Jennings (accepted)	741 15 5

CANNON-STREET.—For Salters' Hall Chambers, Cannon-street. Mr. Collier, architect :—

Brass	£5873
Greenwood & Sons	5550
Gammon	5497
Patrick	5490
Perry Brothers	5447
Hill, Keddell, & Waldram	5215
Browne & Robinson	5180
Colls	4897
Merrit & Ashby	4817

CITY.—For warehouse, Swan-lane. Mr. W. W. Gwyther, architect :—

Ryder	£5660
Hill, Keddell, & Waldram	5480
Jackson & Shaw	5471
Mansfield & Price	5263
I'Anson	5247
Holland & Hannen	4993

EDGWARE-ROAD, W.—For alterations and additions at No. 72, Edgware-road, for Mr. F. Bullock. Mr. W. Seckham Witherington, architect, 135, Cheapside & Worcester:—

Melville	£283 0 0
Scott	198 10 0
Mark	142 0 0

FAVERSHAM.—For alterations at the Wesleyan chapel, Faversham :—

Ratcliffe	£595
Whiting	569
Shrubsole (accepted)	538

MELTON MOWBRAY.—For addition to Harborough Hotel, Mr. R. W. Johnson, architect:—

Weaver & Barnes	£714
East	661

Hornsey.—For new Congregational Chapel, Tollington Park, Hornsey-road. Charles G. Searle & Son, architects:—

Greenwood & Sons	£10341
Jackson & Shaw	10259
Stimpson	9868
Sewell & Son	9863
Wicks, Bangs, & Co.	9736
Higgs	9712
Brass	9694
Myers & Sons	9643
Macey	9320
Patman & Fotheringham	9315
Dove Brothers	9190

Hull.—For new Wesleyan Chapel, &c., Coltman-street, Hull. Mr. W. Botterill, architect. Quantities supplied by Mr. G.W. Ranwell, 3, Westminster Chambers, London:—

Morrell, Hull	£7615	0	0
Marshall, Hull	7358	0	0
Tomlinson, Leeds	7270	0	0
Hockney & Liggings, Hull	7221	12	0
Jackson, Hull	7162	0	0
Sergeant, Hull	7090	0	0
Hutchinson, Hull	7079	0	0
Waller, Hull	7005	0	0
Usher & Stamp, Barton	6892	10	0
Musgrave, Hull	6695	0	0
Scholefield & Taylor, Hull	6693	6	0
W. & I. Hall, Hull (accepted)	6528	0	0

Kettering.—For additions to residence at Kettering. Mr. R. W. Johnson, architect:—

Wilson & Bellamy	£556	10
Briggs	500	0
Barlow & Britten	498	0
Henson & Son	475	0
Sharman	462	0

Leicestershire.—For works at Barkly Hall. Mr. R. W. Johnson, architect:—

Herbert	£2211	16
Fast	2199	0
Neale & Son	2140	0

London.—For pulling down and rebuilding a stable in the rear of No. 10, Leighton-road, Kentish-town, for Mr. H. O. Nodes. Mr. James Robert Furniss, architect:—

Fawcett	£355
Call	350
Hailey	334
Dickens	262
Taylor Bros. (accepted)	248

Ludgate Hill.—For new offices for the National Provincial Plate Glass Company. Mr. T. T. Smith, architect:—

Rayment & Son	£4575
Henshaw	4357
[illegible]	4260
Scrivener & White	4217
Hill, Keddell & Waldram	4098
Kelly Brothers	4064
Browne & Robinson	3937

Maidstone.—For the new Grammar School, Maidstone.

Anscomb (accepted)	£3,821

Manchester.—For the erection and completion of a nine-roomed villa residence, with bath, W.C., and outbuildings, at Heaton Chapel, for Mr. Thomas Leigh. Mr. Sherwin, architect. Quantities supplied.

Webster	£638	10
Wade, Bros.	5[illegible]9	0
Atkinson	585	0
Burnell	567	0
Herd & Eadie	5[illegible]3	0
Davies (accepted)	550	10

Manchester.—For alterations and additions to premises in Deansgate, Manchester, for Mr. E. Holloway. Mr. Sherwin, architect. Quantities supplied.

Herd & Eadie	£126	10
Davis	119	0

Manchester.—For the erection and completion of two cottages at Cadishead, of six rooms each, with cellars, and out-buildings, for Mr. Joseph Ashley. Mr. Sherwin, architect. Quantities supplied:—

Herd & Eadie	£474
Cain	430
Davies	428
Lock	405
Cardwell (accepted)	395

Melton Mowbray.—For new Wesleyan Chapel and Schools. Mr. R. W. Johnson, architect:—

Herbert	£3015
Johnson	2975
Willman	2750
Baines	2639
Halliday & Cave	2607
Fast	2577
Perkins	2556
Stevenson & Co	2510
Weaver	2490
Winkles	2300

Melton Mowbray.—For new stables at Craven Lodge. Mr. R. W. Johnson, architect:—

Bromwich	1167
Halliday & Cave	1047
Fast	1030

Plaistow.—For Methodist free church. Mr. F. Boreham, architect.

				Spire.			Vestry.		
	£	s.	d.	£	s.	d.	£	s.	d.
Death	790	0	0	22	2	0	75	1	0
Finch	738	7	0	30	6	0	78	17	0
Johnson	652	0	0	21	0	0	54	0	0
Thompson & Son	636	0	0	26	0	0	65	0	0
Bartlett	635	10	0	19	18	0	63	5	0
Dyer	626	0	0	29	17	0	59	10	0
Keepence	625	0	0	19	10	0	60	10	0
Pavitt	615	0	0	25	0	0	59	0	0
Powell	580	0	0	30	10	0	89	8	0
Harrop & Goulder	554	0	0	23	0	0	61	0	0

Romford.—For cemetery at Romford. Mr. E. C. Allam, C.E., architect. Quantities supplied.

	Contract No. 1. Draining.			Contract No. 2. Oak Fencing.			Contract No. 3. Laying out.			Contract No. 4. Buildings.		
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
Blease				200	0	0				1704	0	0
Barwell	555	4	0				183	0	0			
Chessum	564	0	0	299	0	0	241	0	0	2100	0	0
Cole	617	2	0	255	0	0	186	5	6			
Carter	670	0	0				296	0	0			
Goddard	825	14	10	181	0	0	183	0	0			
Hubbard	561	14	0	231	5	11	243	7	5			
Haynes	471	0	0	231	0	0	145	0	0	1896	0	0
Hayward	457	0	0*	180	0	0	137	0	0*			
Jackson	630	0	0				220	0	0			
Langton				185	0	0						
Meadmore							255	10	7			
Marshall				174	19	6*						
Morris	640	0	0	294	0	0	180	0	0			
Nichols							192	9	9			
Pizzey	620	0	0				199	0	0			
Potter	605	0	0	204	0	0	255	0	0	1694	0	0*
Ridley				531	0	0						
Standon	660	0	0									
Strickson	485	0	0				162	15	5			
Tobot				184	7	0						
Wood	695	0	0	185	0	0	296	0	0	2103	0	0
Woods	-			175	0	0						
Williams							260	11	3			
Woodcock	368	0	0	210	0	0						

* Accepted.

Southall.—For boilers, pumping machinery, and hot water supply at the St. Marylebone Schools, Southall. Mr. H. Saxon Snell, architect:—

Busby	£780	9	3
Gemson & Co.	756	0	0
Mackenzie Bros.	704	0	0
Lambert & Sons	695	0	0
Fraser	687	0	0
Turner & Co.	662	0	0
Benham & Sons	656	0	0
Jennings	589	0	0
Potter & Sons (accepted)	579	16	0

Southall.—For the erection of boiler house and chimney shaft at the St. Marylebone Parochial Schools, Southall. Mr. H. Saxon Snell, architect:—

Barber & Groome	£362
Nias	335
Nightingale	302
Eaton & Chapman	290
Reavell	280
Howard	275
Gibson Bros. (accepted)	260
Woodcock	250
Parsons & Tilling	237

◆

CONTRACTS OPEN FOR BUILDING ESTIMATES.

St. Mary Abbott's, Kensington, Sept. 7.—For the erection of a new infirmary and other buildings adjoining their workhouse. Ruben Green, Clerk to the Guardians, No. 1, Devonshire-terrace, Wright's-lane, Kensington.

Metropolitan Board of Works, Sept. 22.—For constructing, completing, and maintaining in repair for twelve calendar months after completion, a storm outlet sewer, penstock chamber, with two penstocks therein, flap chamber and tide flaps, and other works in connection therewith, on the premises of the Deptford Pumping Station. John Pollard, Clerk of the Board, Spring Gardens.

Oswestry, Sept. 24.—For a Congregational church, on the site adjoining the old chapel. W. H. Spaull, architect, Albion Chambers, Oswestry.

Tadcaster Union Workhouse, Sept. 10.—For the erection of this workhouse. J. A. Bromet, Clerk to the Guardians, Tadcaster.

St. Pancras, Sept. 5.—For providing and fixing iron railings, with iron coping and brickwork, and concrete foundation, round an inclosure in course of formation at Lismore-circus, Gospel Oak Fields. Chas. Worrell, Chief Clerk, St. Pancras Works Office, 10, Edward-street, N.W.

Keighley, Sept. 5.—Contract A.—For the masons' and bricklayers', carpenters' and joiners', painters', plasterers', slaters', and plumbers' and glaziers' work required in the erection of stable, coach-house, coachman's cottage, &c., on Skipton-road, for Thos. H. Cockcroft, M.D. Thos. Elliott, architect, Devonshire-buildings, Skipton-road, Keighley.

The Barton, &c., District Local Board, Sept. 17. —For levelling, paving, sewering, and channelling Clarendon-road, Eccles, being about 320 yards in length; also for paving and completing King-street, Eccles, about 220 yards in length. George Trenbath, Clerk, Board-room, Patricroft.

Ulster Railway Company, Sept. 7.—For the supply and erection of a new wrought-iron superstructure for the railway bridge over the river Bann at Portadown. Foster Coates, Secretary, Belfast.

Cleethorpes Sewer Authority, Lincolnshire, Sept. 6.—For the supplying and laying about five miles of socket pipe sewers, varying from 18in. to 9in. in diameter; also the necessary junctions, gullies, ventilators, tanks, and outfall works, &c. Rev. W. P. Jones Secretary, Great Grimsby.

Lambeth, Sept. 12.—For the construction of about 1,820ft. of brick sewer, 3ft. 9in. by 2ft. 6in. (one brick), and 5,720ft. of brick sewer, 3ft. by 2ft. (half brick), 740ft. of 15in. pipe, and 3,600ft. of 12in. pipe; together with all side entrances, ventilating shafts, gullies, bell-mouth connections, and other matters, in Princes-road, Broad-street, Tyres-street, Vauxhall-walk, Wickham-street, Vauxhall-street, Jonathan-street, Brook-street, Pleasant-place, Bird-street, and Anderson's-walk; Lambeth. Thomas Roffey, Clerk to the Vestry, Vestry Hall, Kennington-green.

St. James's Church, Colchester, Sept. 20.—For repairing and restoring the above church. S. S. Teulon, architect, 2, Craig's-court, Westminster.

Leeds, Sept. 7.—For the erection of seven dwelling houses (joiners' work excepted), near to Woodhouse Moor. Jno. M. Fawcett, architect, Leeds.

◆

BANKRUPTS.

(TO SURRENDER IN THE COUNTRY).

Ray, George Robert, Dukinfield, engineer, Sept. 28, at Ashton-under-Lyne.—Sharp, Joseph, Leeds, builder, Sept. 29, at Leeds.

PUBLIC EXAMINATION.—ACT, 1869.

Nov, 12, J. Laws, Woodstock-road, Strand-green-lane, builder.—Oct. 8, J. and J. Callie, Liverpool, builder.—Sept. 27, J. Chambers and G. Sweeting, Heaton, Yorkshire, builders.

DIVIDEND MEETINGS.

Sept. 13, J. Croft, Wangford, builder.—Sep. 8, F. Sykes Burnithorpe, near Doncaster, contractor.

SCOTCH SEQUESTRATIONS.

William Wells, Inverness, ironfounder, Sept. 8, at 12.—William Cornelius, Edinburgh, painter, August 30, at 12.

PARTNERSHIPS DISSOLVED.

Kinder and Kinsey, Cannon-st., City, engineers.—Brick Company, Newport.—R. and R. B. Evered, Smethwick, Bishopsgate-st.-without, and elsewhere, brass founders.—M'Cann and Everal, Great Malvern, builders.—Chatwood and Sturgeon, Bolton, engineers.—Marsden and Dryden, Huddersfield, brickmakers.—Apsley and Whiting, Blackheath-park, builders.

◆

BATH STONE OF BEST QUALITY.

Randell, Saunders, and Company, Limited. Quarrymen and Stone Merchants, Bath. List of Prices at the Quarries and Depots; also cost for Transit to any part of the United Kingdom, furnished on application.

BATH STONE OFFICE,
[Advt.] Corsham, Wilts.

Price 4s., Post Free, 4s. 4d.

Laxton's Builders' Price Book,

For Architects, Engineers, Builders, Contractors, Surveyors, and all the Building Trades.

For fully fifty years this work has been considered the chief authority on matters connected with the Building Trades. Its use, even on one occasion, will probably repay the cost of the book ten times over, and instances will continually occur in which the consultation of its pages will effect a saving of many pounds.

London: MORGAN and CHASE, 38, Ludgate-hill.
And may be ordered of any bookseller in the kingdom.

PERSPECTIVES, &c, in PEN and INK or COLOURED.—See photographs from drawings in the Building News of September 10 to October 15, 1869, and many others.—M., 12, Alfred-place, Thurloe-square, South Kensington, London.

HANDBOOKS FOR TOURISTS.

AN INTRODUCTION to the STUDY of GOTHIC ARCHITECTURE. By J. H. Parker, M.A., F.S.A. Third Edition, Revised and Enlarged, with 180 Illustrations and a Glossarial Index. Fcap. 8vo., cloth extra, 5s.

A CONCISE GLOSSARY of TERMS used in GRECIAN, ROMAN, ITALIAN, and GOTHIC ARCHITECTURE. By J. H. Parker, M.A., F.S.A. New Edition, revised. Fcap. 8vo., with nearly 500 illustrations, ornamental cloth, 7s. 6d.

"For the knapsack of the traveller, or the table of the amateur, not sufficiently interested to need the completer work, it is an invaluable little volume."—Builder.

THE ENGLISH ARCHÆOLOGIST'S HANDBOOK. By Henry Godwin, F.S.A. Post 8vo., cloth, 7s. 6d.

"The antiquary will find it inestimable as a book of reference; the student will have in it a valuable assistant; and by a judicious use of it, the sham antiquary may avoid any great mistakes when his cousin the vicar displays to him the wonders of his parish church. . . . . We imagine that no archæologist will henceforth consider his knapsack packed until this little handbook is put in."—Athenæum.

Oxford, and 377, Strand, London: JAMES PARKER and Co.

By THOMAS MORRIS, Architect.

A HOUSE FOR THE SUBURBS, Socially and Architecturally Sketched, with a Prefatory Glance at the Great City. Third Edition, with Designs, 12s. 6d. How to Value, Claim, Protect.

ROYAL INSURANCE COMPANY.
FIRE AND LIFE.
LOMBARD-STREET, LONDON,
and
NORTH JOHN-STREET, LIVERPOOL.

SECURITY TO LIFE ASSURERS.

From a quinquennial valuation of the entire Life liabilities made as at 31st December, 1869, by independent Actuaries at 3 per cent. nett premiums, the Life Assets showed a

SURPLUS OVER LIABILITIES OF £249,956,

enabling the Directors to declare a

REVERSIONARY BONUS AMOUNTING TO £7 10s. PER CENT.

on each sum assured for the five years, and to still hold in reserve all profits accrued on Annuities and Endowments.

EXTRACT FROM LAST ANNUAL REPORT.

After payment of Dividend and Bonuses, the FUNDS of the Company stand as follows:—

Capital paid up	£289,095	0	0
Reserve Fund, and Profit and Loss Account	286,925	10	0
Life Assurance Funds	1,173,401	9	1

JOHN H. McLAREN, Manager.
JOHN B. JOHNSTON, Secretary in London.

IMPROVED DWELLINGS FOR THE PEOPLE.

THE ARTIZANS', LABOURERS', AND GENERAL DWELLINGS' COMPANY (Limited).

Capital £250,000. Shares £10. £1 paid per Share.
PRESIDENT—The Dean of WESTMINSTER.

ARBITRATORS.	LOCAL COUNCIL.
Right Hon. Earl Shaftesbury.	Thos. Bazley, Esq., M.P.
Right Hon. Earl Lichfield.	Jacob Bright, Esq., M.P.
Lord Elcho, M.P.	John Cheetham, Esq., M.P.
&c., &c., &c.	W. R. Callender, Jun., Esq., M.P.

W. Swindlehurst, Manager and Secretary.

The Company is especially formed to erect improved workmen's dwellings on the co-operative principle. No beershop or tavern to be erected on the Company's property. Profits realized by workmen employed on the buildings 40 per cent. Deposits received at 5 per cent. Prospectuses on application, enclosing postage stamp. Office, 1, Great College-street (opposite the House of Lords), Westminster, London.

THE BUILDING NEWS.

LONDON, FRIDAY, SEPTEMBER 9, 1870.

FIREPROOF STRUCTURES.

NOTWITHSTANDING that we live in a complete "age of iron," but very little use, comparatively, is made of that material in our buildings towards counteracting the effects of fire. It is true that in the majority of our new public structures timber in balk has been to a great extent replaced by cast and wrought iron, and care is generally taken that the staircases and floors are constructed so as to be fireproof, or nearly so. Regard is also had to these details in most of the gigantic warehouses and stores that are erected by our merchant princes. But including all these and many more examples, the total yet falls far short of what it should amount to in a city in which fires are almost of daily occurrence. It is unquestionably more costly to build structures of fireproof materials than of others that are not so constituted, and this is the reason why the principle is not carried into practice in buildings of secondary importance, where the first cost is the only feature considered worthy of attention. It is impossible to expect that private builders will ever introduce the fireproof system into their trade until it be rendered obligatory by legislation. This is a step which no one can say would at the present be either fair or judicious. It must not be forgotten that buildings and houses are erected now upon much shorter leases than formerly prevailed, and there is consequently neither the inducement nor the necessity for building them in so durable a manner. We have heard it stated on very good authority that a nobleman who owns a large amount of metropolitan property will not grant a building lease on the land for more than twenty-five years. No one in his senses would build a fireproof structure on a property subject to such conditions, nor could it ever be attempted by the legislature to enforce a measure of that nature, unless at the same time some radical change was introduced in the law of fixtures and dilapidations. The reversion of the tenants' property to the lord of the soil becomes too expensive an affair when durability and permanency are its distinguishing characteristics.

In all buildings the staircases, floors, and roofs are the chief elements of danger and destruction when exposed to fire. All these in ordinary dwelling-houses, and even in structures of a far more pretentious nature, are usually constructed of that inflammable material—wood. It can perhaps scarcely be advanced, so far as the safe escape of the occupants of a house in flames is regarded, that there is an absolute necessity for the roof to be fireproof, but there is no doubt respecting the floors and staircases, or, at the very least, of the latter of these. An iron or stone staircase would, in our opinion, prove a far better mode of egress from a burning house than that which is termed, by mistake, a fire-escape. Granting for the moment that this part of the question is not yet quite ripe for compulsory legislative enactments, there are undoubedly numerous instances in which the fireproof principle in its full integrity should be rigidly enforced. By the above phrase we mean that it should not be applied to merely portions of a building, but should include the whole structure. It is not enough in these cases to leave the matter in the hands of owners of property or tenants of wharves and warehouses; for suppose one proprietor to place a large store of exceedingly inflammable and combustible goods and merchandise under a fireproof building, and his next neighbour to keep his stock of similar commodities in wooden sheds—timber magazines—the former is perfectly at the mercy of the latter. Among the instances to which we have alluded as calling for the interference of the legislature for the compulsory adoption of the fireproof principle of construction may be mentioned that of the gigantic stores, warehouses, and other erections lining the shores of our great national docks. It was but yesterday that property to the value of over £20,000 was either consumed or destroyed by a fire that broke out in the Victoria Docks. The conflagration took its rise in one of the timber warehouses used for storing bales of jute. The warehouse measured 150ft. in length and breadth, and contained no less than 3,000 bales of jute. Fortunately, by dint of great exertion, the fire was confined to the single building, but had it spread to the contiguous ones the loss of property would have been enormous. It will possibly be asserted by some that although a building may be constructed of fireproof materials that will not prevent the contents from catching fire from internal causes. This is true to some extent, no doubt, for if a light were applied to a quantity of jute or other inflammable description of goods, the nature of the building that contained it would not prevent it being set on fire. But if the structure were fireproof, it should contain in itself no element of destruction from fire, and also should prevent the possibility of it being communicated to the interior from causes of an external nature. As we proceed, it will be seen that so-called fireproof structures are sometimes by no means faithful specimens of that principle. It may with truth be said that excepting the desirability of saving the lives of inmates by the adoption of iron or stone floors and staircases, there is not the slightest real utility or immunity from danger obtained by making part of a building proof against fire. It is simply a "doing of things by halves," a course of action that never has and never will attain to any permanent advantage.

Speaking from a professional point of view, the three principal subdivisions of a fireproof structure are the roof, the floor or floors, and the side walls, or carcass. Of these, considered separately, the first is the most common. In fact, any roof that is constructed of iron trussing, as a very large number are at present, in all cases where the span exceeds very limited dimensions, is, *per se*, almost fireproof, unless it be boarded over before the outer covering of slates or other material be put on. The necessity for using boards, and thus doing away, as it were, with the very principle of the roof, is, in some exceptional instances, absolutely unavoidable, as it becomes imperative to have a "cool" covering at all hazards. Even when the covering is not supplemented by boarding, unless the whole of the building be fireproof a conflagration, although it cannot actually consume, yet nearly invariably destroys the roof. That cast-iron columns, beams, and girders, are not fit to be erected again in the same position, was amply demonstrated by the unfortunate burning of a portion of the Crystal Palace. The carcass of this magnificent edifice is fireproof, so far as that term applies to fire originating in any of its actual component parts, but that did not prevent the floor, which is an immense area of planking, from catching the fiery infection from the over-heated pipes and flues. A communication was rapidly established, through the agency of the tall tropical plants and the various beautiful courts, to the glass of the roof and sides, which could melt if it could not inflame; and but for the fact that the wind was favourable to the extinction of the conflagration, there would not have been in the whole Palace "one column left on another." Had the floor of the Palace been of concrete it might not have absolutely prevented the burning that took place, but it would undoubtedly have both mitigated and retarded its course. It is very doubtful whether wrought-iron will withstand with impunity the extreme opposite effects of fire and water, but there is no question that any cast-iron, forming portion of a building that has been through an ordeal of that description, is utterly unsafe to be again employed for any purpose of construction. It is only fit for the melting pot. At the same time we have very strong suspicions that many of the columns and joists forming portions of the *debris* of the Crystal Palace fire, which were sold by auction or disposed of by private contract, have been placed in positions where they are still doing duty. To proceed still further, there are not wanting instances in which buildings erected in every sense upon a fireproof principle have been as totally destroyed as if they had been constructed of the most inflammable materials. The latest example is one which happened about a week ago. Some very extensive flour-mills, scarcely four miles from the town of Cork, were entirely demolished by this cause for the second time. After the first occurrence, it was determined by the company to re-construct the mills on the fireproof system, which had not been adopted in the first instance, in order to obviate the danger of a second conflagration. No pains nor expense were spared to ensure this object, but all the precautions failed to avert the result, which has reduced the whole premises to a mass of ruins, including some very powerful and valuable machinery. In the face of these facts, the construction of a really fireproof building appears to be a question yet to be solved, and the prospect does not seem very encouraging. While there are unquestionably some fireproof systems of a *bona fide* reliable nature, there are a large number so called which are worthless, as well by the materials used as the manner in which they are disposed and put together. There is a great deal yet to be done in this particular branch of constructive art. At present we have only made a commencement, and not a very good one either. There is plenty of room for improvement, and we do not doubt that it will soon become manifest, especially if the legislature turns its attention to so important a subject, which is so vitally connected with the safety and welfare of all great cities.

◆

SUNDRY WORKS IN THE ISLE OF THANET.

(*Continued from page* 165.)

IN the environs of Broadstairs, Stonehouse Farm buildings form a picturesque group, the house at a distance presenting the appearance of one of those interesting gabled residences which we have been describing; and its tiled roof, of a rich golden brown hue, rises pleasantly above the thatched ones of the barns around it, properly marking its prominence over them. A closer inspection, however, is disappointing. On the side next the sea there is nothing but the outline of the gable, the walling being flat and whitewashed. On the opposite side it has not been so spoilt, and the scale being larger than ordinary it is effective, but, as the date in the panel in the gable would lead one to suspect, the execution is coarse, and the bricks of the ordinary size. It is, in fact, only a later imitation of the older specimens of this class, and deficient in all their delicacy and quaintness of treatment. The inscription in the panel is—

Martha Huggett
Mary Brookes
Ann Peylen
1710

Who and what were the three departed Graces thus handed down to posterity it is amusing to speculate about; the enterprising builder we will not malign by supposing to have been a bigamist, yet it is strange that they should all appear to have been equally honoured at the same date; or could the house have been tenanted by a partnership of spinsters? We have not had time to search in local chronicles to elucidate this interesting point.

Asham gable alongside of this one is a curious example, showing how still further degradation of detail has followed the lapse of time. Its very existence would prove that fact. A panel in its gable bears the incription—

Erected
1839
Paull
Haggett

A decorative outline executed in the coarsest and vulgarest manner is all that it has to boast.

Not far from this farm is another, in the village of Smock Street, of far higher, indeed, of remarkable interest; we do not know when we have been so pleased by a modest rural structure, and yet the means by which the effect has been produced have been of the humblest and cheapest. It is of far older date than any of which we have spoken; an ancient timber-built manor-house, it would appear to be dated perhaps as far back as the latter part of the sixteenth century. Its plan that of an I, the centre rising rather higher than the wings, the roofs of which are hipped, and the whole covered with tiles, and a good group of chimneys rises out of them. The entrance is under an open arched porch, recessed in the right-hand wing. The upper story of the central portion is decorated with two large rosette ornaments, divided by fields of diaper work, all of which has been executed in the plaster, apparently by a stamp, the ornamented part being left white, and the ground around covered with grey rough-cast. The designs are thoroughly mediæval and good, and the style one which might be easily imitated in the present day for the cheapest class of constructions.

A quarter of a mile further on, and near the Broadstairs station, is a very small cottage, noticeable for the extreme simplicity with which the style of work we have described can be applied to the cheapest description of dwelling. It has only the gable ends outlined with a large ogee moulding, and a flat sort of pediment at the apex, but nevertheless the proportion and effect are good.

Proceeding onward to the village of S. Peter's, several other most interesting examples will be found; one, diapered richly with blue-black bricks on a white ground, is effective; and another has a sort of projecting backbone to the chimney stack, formed of 4½ corbelled-out brick pilaster, and this is carried down to the springing of the gable, and laterally supported or tied in by brickwork ornamentally with the flints. A house of rather more than usual importance beyond the church has a good brick porch of quaint outline and detail.

The church itself deserves more than a passing remark. It was originally a chapelry to Minster, but became a parish church about 1200 A.D. It has a long nave and chancel, with narrow aisles to the former and a north aisle only to the latter, a fine tower at the north-west angle, and a spacious south porch. The arcades of six arches on each side between the nave and aisles are of very excellent Norman work, and that in the chancel Early English, with two arched openings that once led to the organ loft in one of the spandrels. The church has been apparently very judiciously and carefully restored by Mr. Joseph Clarke, the architect, but the new details and furniture which he has introduced are deficient in tone and character of work. The ceilings yet call out for improvement, being simply plastered over, hiding all the timbers except in the chancel, which has a rather good treatment of an interesting ribbed ceiling, the portion over the sacrarium being enriched with colour.

Most of the windows have been filled with stained glass, we were informed, by Messrs. Heaton, Butler, and Bayne. Only those in the north aisle are to be commended, and those, possibly the latest executed, are really interesting, well drawn and richly coloured: we take them to be from the designs of Mr. Holliday; a band of figure subjects is carried across the centre of the windows, and above and below is grissaille work within borders. As to the rest, they are rubbish of the ordinary manufacturers' quality, with Our Lord and His Saints parodied in so grotesquely comic a style as to be almost blasphemous. The colour and drawing are atrocious; the heads look generally as if copied from barbers' blocks or afflicted with water on the brain.

On the road to Ramsgate, in the charming village of Dumpton, is a pretty brick cottage, the outlines of the gables of which are composed of a succession of portions of circles. The cottager can, if he wishes, repose under his own fig-tree, but was deaf to the adjuration on our part of "In the name of the prophet—figs!" A new Cemetery is being formed upon the heights above Ramsgate, and a chapel and lodge are being erected. To Mr. Gilbert Scott, jun., the credit of the works in progress belong, and they promise well, but are hardly sufficiently advanced for us to criticise. The lodge, however, is nearly finished, and with its archways and timber and plaster story over is stately and picturesque. Passing a very Victorian and unprepossessing, though pretentious, pile of buildings for the coast-guard, the name of the architect of which we did not and cared not to learn, we found our way, with some expectation and in haste, to Mr. E. W. Pugin's great Granville Hotel, S. Lawrence-on-sea. We were anxious to learn what would be the unfettered work of so loud a critic of the work of others. It is said he has spent £30,000 upon it, and to have been his own employer as well as architect. We were grievously disappointed. It is of the loudest Victorian (so-called) Gothic, and a heavy disagreeable mass of building, without sky-line or outline of any kind, with huge Brobdignagian sash windows and moulded lintels, &c., ten times worse than those of Mr. Waterhouse's Club in S. James's-street. One can, however, with justice thank him for the planted promenades and other attractive surroundings of his work.

COSTUME AND ART.

COSTUME may be usefully divided into *three* kinds, or modes, of clothing the "naked animal man." The first may be typified by the old Greek dress, where the evident object was to hide the figure as little as possible, *i.e.*, to so clothe and fit the human frame as not to hide or smother, but to show the form. The next other mode was the precise reverse of this, and was well typified in the magnificent costume of the ancient Mede, in whom the whole figure was clothed in flowing drapery, the object being to exhibit the splendour of the dress, and to add to the dignified presence of the wearer by its shape and folds. These two modes of dress may be said to represent the two opposite ways of clothing the human form, both equally good in their way, and obviously equally suitable for different people and avocations. It must be observed in passing that under these two heads there are a vast number of costumes and modes of dress all the world over, and in all ages, which will equally well typify the two systems; and a work of no small interest might be written on the subject if thus simply divided. The third mode we would venture to call the mode of *quaint* costume—the word quaint being used for want of a better. It may be represented by the dress of the Japanese, where the object would seem to be neither of the two above mentioned—neither to show the form of the wearer nor the grace of the dress, nor even folds of drapery, but simply to cover the body with some quaint device, almost like the strange figures on a common playing-card. It is, perhaps, the very strangest costume that was ever invented by man; the patterns, the colours, and the odd cut of the several parts making up a gorgeous show, not a little strange and quaint, and unlike everything else. There are, under this head, too, a number of different costumes from different countries and in different ages; and much of the costume of the middle ages is of this type, and has come down to us in the glass painting in the windows of cathedrals and on the walls of churches. To this class of dress belongs that of the end of the last century and of the days of Hogarth, where a sort of odd quaintness redeemed it in a great measure from contempt. Indeed, as we see it in the paintings and prints of Hogarth, it is impossible not to be struck with its oddity; and the wig and great horseman's coat, long waistcoat. short breeches, and heavily buckled shoes, make up together at least a harmonious whole, and the word quaint seems to be the only one which can well characterise it.

It is from this strange idea of a human dress that our modern costume of to-day comes by regular descent; and it of right must come under the same general heading, for it certainly does not belong to the Greek idea of dress, nor to the Median robe order of costume, nor, indeed, if the truth must be told, to the quaint, but is truly a thing by itself. It is simply the very stupidest thing ever yet invented by the ingenuity or perverseness of man. It comes under neither of those two leading principles which should regulate all costume, viz., either to show the form and action of the human frame, or to exhibit the form and folds of the dress with which it is clothed; or, to go to the third and only other way, to show mere "quaintness," as we have ventured to call it, where neither of the two first requirements of dress are aimed at. It would seem, indeed, absolutely impossible to conceive anything more ungainly and inconvenient than the present system of modern fashionable male attire—the "sustained splendour" of Mr. Disraeli—for it does not allow of the form to be seen; it is nothing in itself, there being no folds or drapery, and there is in it no sort of quaint interest to make up in any way for the loss of the two prime ideas in all dress. To confine our remarks to the ordinary fashionable male costume, we may take it for granted that the dress-up of a smart waiter at a big hotel or club may be taken as fairly typical of it. The arms and legs of the old Greeks were left bare, for not living under Mr. Gladstone's rule they knew nothing of the "anthropomorphic element" in fine art; so that when they wanted to draw the human arm they were content, poor simple, ignorant souls, to look at one, and the old Greek dress allowed of it. In our improved modern system of clothing, this it is clear cannot be done, for the climate, it will be urged, compels the covering of legs and arms. Be it so. Neither, again, does the form of the dress allow of the dress to show itself, and to become a thing of beauty *per se*, or even one of convenience; for what can possibly be more ugly or awkward than the semi-tight fitting sleeve of a common coat, or the still worse and more fashionable trousers? Quaintness will not surely be charged upon them, so that neither form, nor comeliness, nor oddity belong to it or to them, and certainly not mere and simple utility. Fashion does all the work.

It would be useless to go into the merits of the world-renowned swallow-tailed coat—that pride of the smart waiter, and last hope of those who glory in being dressed. Of its convenience or beauty, no one perhaps ever yet did boast, any more than they have done or do of the tight-fitting boot or tall chimney-pot and so dearly-fashionable hat. They are all things which the tyrant fashion compels everybody to wear and to be perpetually inconvenienced by. It really all seems to be typical of the art of the time of this latter part of the nineteenth century, when all real and genuine art has disappeared and given place to machinery and manufacture. It would be impossible to sink lower than we now are sunk in this country—at least, in all matters appertaining to art, whether high or low; and one means of rescuing things from this most deplorable state would be, as we take it, some improvement, or say merely change, in costume; and it would seem that the only channel through which any such change or improvement is at all likely or possible is in that of our army, and in the dress and appointments of soldiers.

The tremendous and disastrous failure of that gallant and so perpetually victorious army of France has been so sudden and unexpected that no man has had time to think anything about it, or how it has ever come to pass that so magnificent a body could have suffered and lost as they have done. May it be allowed us in this place to suggest *one* cause of it—the excessive neatness, primness, and fit of the clothes of the men; everything bran new, and of the brightest and gayest colours. The man was lost in his smart tailoring. And the course of the war has been so rapid that there has been no time for any one to grow shabby enough to work, or do anything, or to think of his own personal and bodily self. In the old Italian wars of the first Napoleon, the soldier wore off the smartness of his smart attire before he found himself on the battle-field, was ready for work, and thought of himself and not of his dainty clothing—all so tight, and awkward, and inconvenient, and unfit for its stern purpose. What more important subject, then, can there be than that of the art combined with utility in costume, more especially in the dress of the soldier? In it most surely there ought to be combined the two prime requisites—utility and convenience, and ease of movement with sightliness and artistic beauty, and appropriateness and harmony of colours. Cobden used to say that the French were so artistic a nation, and so clever in making the most of what other people would despise and throw away as useless, that they levied a sort of tax on the whole world in the matter of setting the fashions and showing the rest of the world how to make a dress, and then how to wear it after it was made; not, by the way, so easy a feat as some might be disposed to think; but it is to be feared that they have paid a fearful price for their artistic superiority, for what with this world-taxing smart dressing and Hyde-Park generalship the nation itself is all but well nigh lost, and their Emperor quite. It cannot be amiss, therefore, to draw attention to the art of costume, and to the best possible way in which the human body may be clothed so as not to impede its movements, and yet that this costume shall be at the same time beautiful in form and harmonious in colour. In military dress these two principles are fundamental requisites, as no soldier will be, or ought to be, satisfied unless he looks like a soldier. The old Greek went out to battle with his limbs as free as possible, and with a dress allowing of the utmost ease and freedom of action and movement; and may it not be a good and useful question, in case of any radical change of costume, either in the regular army or in the volunteer force, or in the formation of any new volunteer regiment, to depart a little from the conventional and fashionable type of clothing, and aim at something better and more workable and appropriate? Humanity itself is, as things now are, absolutely blotted out by the unsightly costume it is compelled to wear; and pictorial art is impossible all the time there are no living exemplars to keep the artist's eye and hand to the work he has to do. In either of the three systems of costume-making we have named there is to be found abundance of precedent and examples to go by; and the difficulty, if any there be, will be in the number, and not in the paucity of examples. Of course it will be understood that all that has been said of a required change in military costume applies equally—nay more—to civil costume; and it is in the hope of seeing some speedy change in the dress of the soldier, now generally admitted as desirable, that these few hints on the subject of costume, and the need of beauty and harmony in it, have been written. C. B. A.

YORKSHIRE ARCHÆOLOGICAL AND TOPOGRAPHICAL ASSOCIATION.

THE Huddersfield Archæological and Topographical Association held their fourth annual excursion on Wednesday week, the destination on this occasion being the ancient borough of Pontefract. Arrived in Pontefract the excursionists proceeded at once to examine the objects of interest in the neighbourhood, under the guidance of Mr. T. W. Tew and the secretary, Mr. Fairless Barber. Having inspected Swillington Tower and the Upper Guard House, where the courts of the Duchy of Lancaster were formerly held, the party proceeded to the remains of the famous old castle of Pontefract, making a halt at an elevated spot near the porter's lodge. Here a special general meeting was held. The president of the Association (who occupied the chair) suggested several alterations in the rules of the body, with the view of extending its operations and usefulness, and concluded by moving that "The society should henceforth be called the 'Yorkshire Archæological and Topographical Association,' and that the object should be 'to examine, preserve, and illustrate the history, architecture, manners, customs, arts, and traditions of our ancestors, and especially to further the collection and preservation of materials for the history and topography of the county of York.'" This was agreed to unanimously, and some formal resolutions following upon it were passed. The company then listened attentively to an elaborate and interesting paper by Mr. Tew on the history of the surrounding neighbourhood, with especial reference to the castle. After the reading of Mr. Tew's paper, the party proceeded to make a minute inspection of the remains of the ancient castle, and on leaving the castle the party wended its way to the rock-cut hermitage, which is one of the most interesting sights of antiquity to be witnessed in Yorkshire. The inspection of the visitors was much facilitated by Mr. James Fowler, F.S.A., who read a paper on the history and character of the scene. He traced the history from the first mention of the hermitage by Thoresby, in 1703. It seems it was founded in the year 1386, by Adam de Laythorpe and his son Robert, and in 1433 became attached to Nostell Priory. There was a garden surrounding the dwelling of the hermit, which he might cultivate at his leisure, and from this runs a narrow descending passage, leading to what was the dwelling. An irregularly quadrilateral chamber cut in the rock is reached, and by descending another flight of steps, access to a spring of water of crystal purity is obtained. On the west side of this secluded dwelling is the cavity in the rock which served the hermit for a chapel. The altar and the reading desk, also of rock, still remain intact, and on the opposite side to the altar is a settle, which must have been used by the hermit to repose or to meditate on. From the hermitage the company went to the Town-hall, where a museum, containing some most remarkable archæological curiosities, had been made up of loans from Lord Houghton and others of the leading gentry of the district. The church of S. Giles; an old house in which King James II. is said to have held his court, and which contains a fine old specimen of wood carving; and a strange vault below the Malt Shovel public-house, were next visited. The company then proceeded to the Red Lion Hotel for luncheon. After luncheon, carriages were taken to All Saints Church, mostly in ruins. Mr. J. T. Micklethwaite, F.S.A., read a paper descriptive of this interesting place, which used to be called the Minster of the Moors. During the reading of the paper the company assembled in the transepts of the old building, which have recently been renovated, and are now used for service. The greater part of the remains of the edifice, Mr. Micklethwaite said, corresponded in date with an ordination in the year 1361, by the Archbishop of York, of thirty marks from the priory and convent of Pontefract to the then vicar. The architecture mostly belonged to the latter part of the fourteenth century. During the sieges of the seventeenth century the church was reduced to a state of ruin. Special notice was directed to a remarkable double-stair in the tower, which is almost the only specimen of the kind in England. A model of the staircase was exhibited in the church. The New Hall was the last object inspected by the party. This is a grand old ruined mansion of the latter part of the sixteenth century. Carriages were taken from the New Hall to the railway station, where a large part of the company prepared for departure to their respective destinations.

THE POTTERY AND PORCELAIN OF DERBYSHIRE.*

A FEW particulars from this manual (intended as a text-book for visitors to the recent Fine Arts Exhibition held at Derby), regarding the history of fictile art in Derbyshire, may not be uninteresting. The manufacture of pottery in various forms has long been one of the chief trade resources of the county. Kilns were probably erected soon after if not before the Conquest, and as early as the fourteenth century they appear to have furnished tiles for the pavement of many ecclesiastical buildings. The manual before us does not, however, pretend to trace the history of these earlier efforts, but hastening down to the eighteenth century, refers more particularly to the principal modern factories. Foremost among these is the establishment described in the *Derby Mercury* of 1785 "as that great and extensive factory commonly known by the name of 'the Derby Pot Works.'" Its founder and date of establishment are alike unknown, and the earliest mention of the place is in connection with William Duesbury, about 1750, who carried on the works "greatly assisted" by Mr. Heath, the banker, "and proprietor of the Pot Works on Cockpit Hill." Whatever the quality of the work turned out of this establishment may have been, the quantity was at any rate large, for a notice of sale, dated March 17, 1780, to wholesale merchants in earthenware, finishes with a special announcement that "no less a quantity than two horse loads will be sold to any one person." The ware sold appears principally to have consisted of enamelled and blue and white useful china, cream ware plain and enamelled, and white, stone, and brown ware. Duesbury appears before this time to have quitted the concern, and to have established a china factory, where a new and improved class of goods was turned out under his direction. In the face of this competition, and perhaps more immediately from the bankruptcy of John and Christopher Heath, the old concern rapidly declined, and in 1785 the factory and all its belongings were disposed of by auction. Specimens of the work produced by Duesbury and the Heaths at the Pot Works exist, but are rare.

The china works appear to have been carried on by Duesbury (who died in 1786), and his son, who afterwards entered into partnership with one Michael Kean, until the year 1809, when the business passed under the management of Mr. Robert Bloor, who had been previously for several years clerk and salesman to the firm of Duesbury and Kean. He appears somewhat to have sacrificed the artistic quality of his wares to commercial considerations, and the periodical auction sales introduced by him are said to have been productive of much discredit to the works. At his death in 1846, after a long mental illness, the factory, after abortive attempts at resuscitation by others, was finally broken up.

The figure department of the Derby China Works is said to have been the largest in the kingdom. The celebrated "biscuit" body was then in its best state, and in Duesbury and Kean's time great care appears to have been taken with its manufactore. China factories and potteries of less repute appear to have existed in Pinxton, Wirksworth, Alfreton, Belper, Brampton, Chesterfield, Church Gresley, Harlshorn, Denby, Ilkeston, Newbold, Smalley, Swadlincote, Tickenhall, and Whittington.

Illustrations of some of the marks used by the manufacturers are given in Messrs. Wallis and Bemrose's book, together with some particulars respecting the artists engaged in painting the porcelain. For these our readers will do well to consult the book itself.

At the recommendation of Professor Abel, Chemist to the War Department, the process invented by Messrs. R. Gay and Co., of Alton, Hants, for waterproofing and preserving stone and other buildings, is, by order of the Office of Works, to be applied to a portion of the decayed stonework at the Houses of Parliament.

---

* "The Pottery and Porcelain of Derbyshire." By A. Wallis & W. Bemrose, jun. London & Derby: Bemrose & Co.

Building Materials, &c.

GLASS.

THE glass used for building purposes is of three kinds, viz., crown glass, sheet glass, plate glass. Crown glass is manufactured in circular flat tables, each having a knot or knob in the centre to which in the course of manufacture the flashing rod was affixed. As this knob would, however, render the table both inconvenient and unsafe to handle, it is usual before selling it to cut off a segment at about 4in. from the knob, and the smaller piece thus cut off is technically termed a *slab*, while the larger piece with the knob retains the name of a *table*. Crown glass is superior in lustre to sheet glass, and presents a less undulating surface.

The different qualities of both crown and sheet glass are distinguished in the trade as best, seconds, thirds, and fourths. The "best" is that which is of the purest metal, and free from blemishes, specks, streaks, &c. "Seconds" is inferior to best, in not being quite so free from these blemishes. "Thirds" is still inferior, both in regard to quality and colour, being of a greener hue; it is, however, the kind most commonly used for glazing in ordinary windows. "Fourths" is the most inferior kind of glass manufactured, only fit for out-houses and the most inferior purposes, where quality is not a consideration. In addition to these kinds the manufacturers supply a superior class, consisting of slabs selected for extra purity and lustre, which commands a higher price.

Crown glass is supplied to the trade in crates at a uniform price per crate, the difference in value being arranged for by including a greater or less quantity in the crate. Thus a crate of "best" crown glass contains 12 tables; a crate of "seconds," 15; and of "thirds" or "fourths," 18 tables. The number of square feet which may be cut out of an average crate may be estimated as follows:—Each table is from 4ft. to 4ft. 6in. in diameter, but owing to the knob in the centre and the circular shape of the slabs, there is always some waste in cutting the glass into squares. Some tables may be cut to within two inches of the knob, but others not nearer than four inches.

	Ft.	In.
Supposing a table to be 4ft. 6in. diameter, and that it may be cut to within 2in. of the centre, then the quantity of glass that may be cut from it, including the triangular pieces, will be	14	2
If the diameter be only 4ft. and the table cannot be cut nearer to the centre than 4in., the quantity will be..................................	10	10
	25	0
The triangular pieces, however, are of very little value, and must be deducted, about................	2	6
Net available contents of the two tables	22	6
Average contents per table	11	3

In this calculation we have taken the sizes of squares that will cut to the most advantage, but as it will be necessary to cut squares of all sizes from the tables as they are wanted, the average produce per table is not more than 10ft. superficial. The following are about the average prices of crown glass per crate.

		£	s.	d.
Selected glazing and Picture qualities	A.	6	10	0
	B.	5	15	0
Ordinary Glazing Qualities	Best	4	15	0
	Seconds	3	8	0
	Thirds	2	12	0
	Fourths	2	2	0

Tables are, however, now made of such a size that squares may be procured of from 24½in. to 30in. across, and these will allow of squares from 34in. by 18in., 38in. by 24in., and intermediate sizes. The extra-sized slabs are supplied at prices per slab, measured exact; the price varying from 5s. 6d to 19s., according to size, for the best selected quality, while "thirds" range from 2s. 6d. to 9s., and "fourths" from 1s. 9d. to 6s. 6d.

Sheet glass differs from crown glass in the absence of the central knob and in being manufactured in squares, not in circular slabs, by which the great waste in cutting is obviated, and the purchaser can more certainly estimate the contents of his crate. It has been known in the trade, at various times, as German plate glass, British sheet glass, broad window glass, spread window glass, and once it was called inferior window glass. This last term it deserved originally from the coarseness of the materials employed in its manufacture, the alkali being soap-boilers' waste and kelp; but the term is no longer applicable, the manufacture having been considerably improved of late years, more particularly by Messrs. Chance, of Birmingham, and Hartley, of Sunderland, and good sheet glass is now inferior to crown glass in lustre only. The crates in which it is sold are made up of sheets of various sizes as manufactured, the price per foot superficial being regulated by the maximum size of the sheets contained in the crate. Thus, in 21oz. sheet glass of thirds quality, if the maximum size of the sheets be 44in. by 34in., the average price per foot is 5d., but if the sheets be of the maximum size of 75in. by 45in., the price per foot is 1s. This great difference in price is attributable to the difficulty of manufacturing the largest sizes. The largest British sheet glass is of 75in. by 45in., but Messrs. Mason Brothers, of Glasgow, Belgian sheet glass merchants, inform us that they can supply Belgian 21oz. sheet glass of thirds quality of the extraordinary size of 80in. by 72in. The custom of the English trade in supplying the glass in crates, with squares of various sizes, is not adopted by the Belgian manufacturers. Their crates contain squares all cut to a uniform size, varying from the smallest required to the largest manufactured. This difference, no doubt, gives a great advantage to the purchaser of Belgian glass, who saves all the waste which necessarily takes place in cutting up squares of the variable dimensions found in an English crate. Table I. shows the ordinary prices of British sheet glass per superficial foot.

If the customer, however, wishes for squares cut to a particular size, the English manufacturers supply them according to special order. The prices, however, are very considerably increased, as will be seen by Table II.

The following are about the prices of Belgian sheet glass, which, however, being supplied in crates of a defined quantity and in sheets of uniform size, are really rather below these quotations, because the customer, as before remarked, may cut up the squares without waste:—

Glass-works of Andris-Lambert & Co., Marchienne-au-pont, Belgium.

Window glass, in crates per 100ft. square, French measure.	Best		2nds		3rds		4ths	
	s.	d.	s.	d.	s.	d.	s.	d.
Sizes under 26 united in.	18	5	15	0	13	2	11	2
From 26 to 40in.	20	10	16	10	14	5	12	0
From 44 to 50in.	25	0	20	5	16	0	12	10
From 51 to 60in.	32	7	26	5	17	2	13	7
From 75 to 79in.	40	0	32	10	20	0	17	7
From 80 to 85in.	44	0	36	0	22	5	20	0

The above are, of course, the average prices, and must not be understood as present actual quotations, which of course vary with the fluctuations of the market.

British fluted sheet glass of 15oz. and 21oz. is usually supplied in crates not above 43in. long, but it is made up to 50in. in length. The price is from 2d. to 4½d. per foot more than the prices of fourths sheet. 26oz. and 30oz. fluted in crates and squares are double the prices of fluted 15oz. and 21oz. respectively. Belgian fluted of 15oz. is supplied at 41s. the crate of 200ft. Obscured sheet glass (English), is supplied in all substances at from 1d. to 1½d. per foot more than the prices of fourths sheet. Belgian obscured of 15oz. is 37s. the crate of 200 feet, and of 21oz. 47s. the crate of 200 feet.

Plate glass is superior in quality and colour to both crown and sheet glass. The best kind may be tested by its perfect freedom from colour, blemishes, specks and striæ of every kind, and is not subject to dampness or "sweating;" that sort which is tinged is of inferior quality. It receives its name from its being cast in large sheets or plates.

Patent plate glass is somewhat improperly so called, it being really a variety of sheet glass. It was first introduced by Messrs. Chance, of Birmingham, in 1840. It is obtained from thick sheet glass by a peculiar process of grinding and polishing. The surface obtained by this process, though not perfectly true, is very nearly so, and in brilliancy it is unsurpassed even by cast plate. For glazing sashes of ordinary size it has nearly superseded crown and sheet glass. But for squares of somewhat larger dimensions it is questionable whether the cast plate is not cheaper. It is made in three qualities:—B, or best; C, or second; and C C, or third quality. Each of these is of four kinds, known as, Nos. 1, 2, 3, 4. No. 1 is of an average thickness of 1-16in., and is of an average weight of 13oz. to the foot; No. 2 is 1-12in. thick and 17oz. to the foot; No. 3 is 1-10in. thick, and 21oz. to the foot, and No. 4 is 1-9in. thick, or 24oz. to the foot. No. 4 B is thus the very best quality made. It is manufactured in sizes from 4ft. to 13ft. in area, not above 50in. long, or 36in. wide. This glass is supplied of three colours, viz., the "usual" and "light"—these are more or less tinged with green;—and the "extra white," which is almost colourless. The "usual" and "light" colours are most preferred for glazing purposes, being harder, more lustrous, and less liable to be scratched in cleaning; the "extra white" is, however, best for engravings, water-colour drawings, &c. Tables III. and IV. show some of the prices.

Polished plate glass can be obtained for general glazing purposes up to about 80ft. superficial of two qualities, "usual" and "best." The usual thickness is ¼in.; higher prices are charged for glass selected to be cut above 3-16in., 5-16in., and ⅜in. thick, while for above ⅜in. thick special prices are charged. It is sold at per foot super., and the prices per foot rise considerably with the size of the plate. Thus for the best glazing quality of plate glass, plates between 2ft. and 3ft. can be had for 2s. 4d., between 6ft. and 7ft. 2s. 11d., between 12ft. and 16ft. 3s. 5d., between 40ft. and 45ft. 4s. 1d., and between 55ft. and 60ft. 4s. 4d. per foot. Above 60ft. special prices are charged.

Rough plate glass, cast, is used for roofing in skylights, windows. &c., in plates from not above 20in. long to above 120in. long, in thicknesses of ¼in., ⅜in., ½in., ¾in., 1¼in. and 1½in., but these thicknesses have certain limited lengths. The widths are the same as for plate glass. This glass is not ground or polished, but rough from the table on which it is cast, and showing the marks of the table on its under side. It may be had ground upon one or both sides, in which case it is charged the same as its thickness before grinding; thus ¼in. thick when ground is charged as ⅜in. rough, and an additional charge is made for grinding.

The patent rolled rough plate is a different kind of glass to the foregoing, and is extensively used for ridge and furrow roofs, conservatories, manufactories, skylights, and places where obscured glass is required to intercept the vision without diminishing the light. It is made of two kinds, plain and

TABLE I.

In crates; squares not exceeding	15oz.				21oz.				26oz.				42oz.		
	Best	2nds	3rds	4ths	Best	2nds	3rds	4ths	Best	2nds	3rds	4ths	Best	2nds	3rds
	d.	d.	d.	d.	s. d.	s. d.	s. d.	d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
44in. × 13in.	8	6	4	3	9	6½	5	4	11	8	6½	5½	1 9	1 6	1 3
50in. × 36in.	8½	6½	4¼	3¼	10	7	5¼	4¼	1 1	9	7	6	2 3	1 10	1 6
55in. × 38in.	9½	7	4½	3½	11	8	5½	4½	1 4	10	8	6½	2 9	2 4	1 10
60in. × 40in.					1 2	9½	6½	5	1 6	11	9	7½			
65in. × 42in.					1 6	1 0	8	6	1 9	1 2	11	8½			
70in. × 44in.					2 0	1 4	10	7½	2 3	1 8	1 1	10			
75in. × 45in.					2 6	1 9	1 0	9	2 9	2 2	1 4	1 0			

TABLE II.

Squares cut to order.	15o :				21oz.				26oz.				42oz.		
	Best	2nds	3rds	4ths	Best	2nds	3rds	4ths	Best	2nds	3rds	4ths	Best	2nds	3rds
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Under 9in. × 7in.	4	3¼	2¼	1¾	4½	3½	2¾	2¼	6½	5½	4¾	3¾	1 3	1 1	11
12in. × 9in.	5½	5¼	3	2¼	5½	4½	3¾	3	7	6	5½	4½	1 5	1 3	1 1
50in. × 36in.	1 0	9	6	5	1 1	10	7	6	1 4	1 0	9½	8	2 8	2 2	1 10
55in. × 38in.	1 1	10	7	5½	1 2	11	8	6½	1 6	1 1	10	8½	3 3	2 9	2 2
65in. × 42in.					1 9	1 3	11	1⅛	2 0	1 6	1 2	11			
75in. × 45in.					2 9	2 0	1 4	1 0	3 0	2 6	1 9	1 3			

TABLE III.

USUAL COLOUR.

	Best Quality. (B)				Second Quality. (C)			
Sizes. in. in. in. in.	1 s. d.	2 s. d.	3 s. d.	4 s. d.	1 s. d.	2 s. d.	3 s. d.	4 s. d.
About 7 × 5 {and not exceeding in area} 8½ × 6½	1 10	1 10	1 11	2 0	1 9	1 9	1 10	1 10
,, 10 × 8 ,, 12 × 9	1 11	1 11	2 0	2 1	1 9	1 9	1 10	1 11
,, 12 × 9 ,, 1 foot	2 2	2 3	2 4	2 5	2 0	2 1	2 1	2 2
,, 4 feet ,, 5 feet	2 8	2 9	2 10	3 0	2 5	2 5	2 6	2 8
,, 12 ,, ,, 13 ,,	3 3	3 4	3 5	3 6	2 11	3 0	3 1	3 2

Light colour 5 per cent. additional to the above prices.

TABLE IV.

EXTRA WHITE.

	Best. (B)				Seconds. (C)			
Sizes. in. in. in. in.	1 s. d.	2 s. d.	3 s. d.	4 s. d.	1 s. d.	2 s. d.	3 s. d.	4 s. d.
About 7 × 5 {and not exceeding an area} 8½ × 6½	1 11	2 1	2 4	2 7	1 10	1 11	2 3	2 6
,, 10 × 8 ,, 12 × 9	2 3	2 5	2 8	3 0	2 0	2 1	2 6	2 10
,, 12 × 9 ,, 1 foot	2 4	2 6	2 10	3 2	2 1	2 2	2 8	3 0
,, 4 feet ,, 5 feet	2 10	3 0	3 5	3 9	2 7	2 9	3 2	3 6
,, 12 ,, ,, 13 ,,	3 9	3 10	4 2	4 6	3 4	3 6	3 10	4 2

fluted. The "plain" is merely marked by the fine grain of the table upon which it is cast. The "fluted" is of two sorts—No. 1, large pattern, having 3½ flutes to the inch, and No. 2, small pattern, having 12 flutes to the inch. The large pattern has a bright and glistening appearance, and is adapted for situations at a great distance from the eye; the small pattern is best for situations where a clear glass and much non-transparency are required. It is sold in stock sizes, as manufactured, in crates for cutting up, in plates of 30in. wide and from 40in. to 50in. long, or of 20in. wide and from 50in. to 70in. long. It may also be had above 70in. in length.

There are many other varieties of glass known in the trade, but they will each come under one or other of the heads above enumerated, and the foregoing remarks will be quite sufficient to enable the reader to judge of the general commercial value of the different kinds used in building. To estimate its intrinsic usefulness for the different purposes to which it is applied, it is necessary to have some knowledge of the ingredients used in its composition, and of the chemical effect of each upon the mass, together with the peculiar properties of each kind, and this we propose to give in succeeding articles.

◆

THE ELEMENTS OF HAND-RAILING.

MR. ROBERT RIDDELL, of Philadelphia, has just published, through Claxton, Remsen, and Haffelfinger, Philadelphia, and Trübner & Co., London, a very useful book on hand-railing. In his introduction Mr. Riddell says:—"There is no part of the joiner's art which demands more nicety of attention, and carefulness in practice, than this of stair-building and hand-railing; for nothing will so clearly prove the merits or demerits of the workman. The stairs is the great feature of a building. In the grandest houses it is the first object which meets the eye and claims the attention. Its lines are so open to criticism that there is no avoiding the consequence of their failure—the adverse verdict falls, deservedly or undeservedly, on the whole house. The impression produced, being the first on entering the hall, is not to be wholly eradicated afterward by any commendable features elsewhere. Therefore the stair-builder has much to answer for, and a character to establish or sustain by his work, which should call for the fullest effort of his capacity, and the most workmanlike ability he can bring to bear upon his task. It is not a matter of surprise, then, that this subject should have drawn out the best efforts of experienced and practical authors, who have given it their closest attention, with a view to rendering its mysteries easy of comprehension, and pleasing as a study."

The author concludes his introduction with the following practical suggestions:—

"The principal lines in the following system of hand-railing, being right angles and parallels, the readiest way to draw them is, with the use of a straight edge, a square, and a bradawl. Lay on the straight edge, and fasten its end with the bradawl, placing the square against the straight-edge. Next move both together until the blade of square and ordinate agree. You are now ready to draw *parallels*.

"The next line is the *seat*, which in all cases is square with ordinate.

"Be exact in drawing every line, and especially those for bevels.

"The moulds are struck with a string, or a fine twine made of such material as will be least liable to stretch.

"Have the elliptic curves on mould correct, so that the cylinder part of wreath piece may be true, showing that when the slabs are cut off the upper and lower sides, that the wreath is a parallel width. Let order, neatness, and accuracy appear in all your operations.

"Avoid the ugly habit of cutting and slashing, then ogling your work on the skew with one eye, and the other shut.

"When there is a mark or line, intended for a purpose, work to it. Have no fitting, guessing, or tinkering.

"Never make two cuts where one will answer.

"Be sure that your drawings are correct in every particular; and when fully satisfied on this point, commence the job without doubt or fear as to the result.

"Mark and cut the plank square through, according to mould. This is much better than cutting the wreath in parallel width; as the material saved is not equivalent to time lost in squaring the piece.

"Have all the joints correctly made; also bevels properly applied. An error in either renders both work and material a loss.

"Mark the tangents on both sides of mould.

"Let bevel lines that pass through half the width and half thickness of rail (shown on joints) be continued on surface of stuff, and square with joint.

"The application of mould is to make its tangents stand over those on stuff. This simple method gives the wreath its cylinder form, and directs the working of it.

"In taking lengths of straight rails which connect with wreaths—measure from spring to spring, or plumb lines. These are marked or shown on shanks of platform stairs."

It is our intention to reproduce in the Building News some of the most suggestive portions of Mr. Riddell's very useful work. This week we give what he says "On the Circle and its Tangents;" next week will appear "Sections of Cylinders; the Ordinate—its use and value." Those who wish to know all that is said by this practical author are referred to the book itself.

Plate 1.—The Circle and its Tangents.

Figure 1. Describe a circle, and enclose it by tangents, forming a square at A; the acute angle at B; and obtuse angle at D.

On this simple diagram rests the whole principle of hand-rail construction. And as no wreath can be formed without a mould, and no mould be produced correctly without tangents, it is desirable that this should be distinctly understood. The tangents marked on the surface of a mould, when in position, stand exactly over those on the ground plan. Thus all wreaths that stand on a pitch must form elliptic, not circular curves. The succeeding problems will fully explain this principle.

Fig. 2 is a form that approximates to the elliptic curve. It is struck from centres L, H, T.

Let A C be the long diameter, B D the short. Join C D. Let D E equal B D. Drop the perpendicular cutting F. Let D N and C H equal F E Join H N. Bisect it, and draw the line cutting L. Thus giving L, H, T as centres, from which the curves are struck.

By using more centres a truer ellipse may be found; but the object is to make the problem plain, so that it may be practically applied to the construction of *strings for stairs*, and other work requiring to be bent by kerfing.

Fig. 3. Here is shown the *trammel*, and its application to the elliptic curve.

The long diameter 2, 3 is called the *major axis;* and the line O D the *minor axis.*

The curve is struck by adjusting the heads on the rods. For example: Let A C equal O 3. Have B C equal O D. Now move the head C, where a pencil or point is fixed, and the curve is traced in the most perfect manner.

Fig. 4. This problem shows the ellipsis struck equally true by means of a string; the operation being much quicker and more off-hand. Two pins and a string are the only requisites; and almost any one can comprehend and practise it.

To strike the curve: Let A C be the long diameter; and B D the short. Set the compasses to A B; and, with that distance, take D for centre. Then intersect at H and L. Stick a pin in each. Tie a string to that in L. Bring it around pin in H, as shown. Next, stretch the string with a pencil, until its point touches D. Now sweep the curve toward A. Return to D, and complete the curve to C.

The pencil should have a notch near its point, in order to keep the string from slipping. The string should be of a material that would stretch the least.

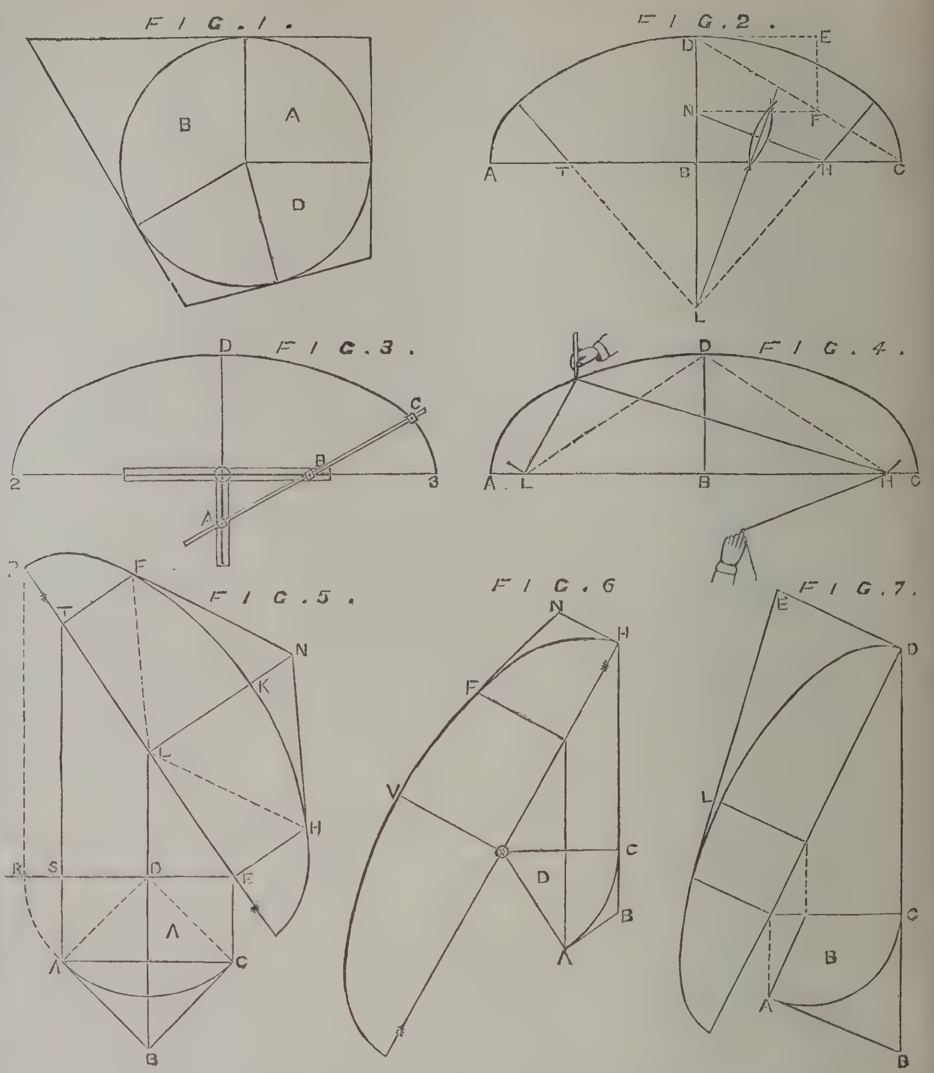
Should there be any one who is not acquainted with this very simple mode of drawing the ellipse, let it be learned at once; it takes but a few minutes, and the materials are always at hand.

Two pins and a linen thread struck every mould laid down in Mr. Riddell's book.

Try it on a piece of board, or anything most convenient. If the first attempt should fail, try again and again until perfect; remembering to keep the hand and pencil steady, and the string gently stretched, so that the curve may be produced with neatness and accuracy.

In order to prevent repetition, it is necessary to state here that as the method just given has been adhered to in all the drawing of moulds presented in Mr. Riddell's book, it will be understood that the points for the pins are indicated by * *.

Fig. 5. This diagram shows the tangents and the elliptic curve drawn on a flat surface. These, when in position, stand over two sides of the square A, the inclination or pitch being T E. The tangents A B and B C form the right angle. Those which are to stand over them form the obtuse angle. This, however, must be determined by construction. For example: Take the line B D extended as the ordinate; draw from A and C lines parallel with it cutting the line of inclination or pitch at T and E. Next, square over from T, L, E. Make T F equal S A, and L N equal D B. Also, E H equal E C. Then join H N F, and we have the required angle, as well as the lengths and tangents to stand over those on the square A.



HAND-RAILING.—PLATE I.—THE CIRCLE AND ITS TANGENTS.

The line cutting the corner of the square D is called the *base* or seat; and always makes a right angle with the ordinate.

To find half the length of the elliptic curve on its long diameter. Let D R equal D A, then draw R P, which gives P L, the required length. The minor axis L K always equals half the diameter of the given circle on the ground plan. Or, in other words, let L K equal D A. Now find points to insert pins, and sweep the curve by the method already given.

It will be seen that the curve touches H and F in the same manner as the tangents or sides of the square touch the curve A C. Such will be the case in the practical construction of every wreath in hand-railing. Therefore the tangents which stand on a pitch or inclination have to be obtained first, before the elliptic curve can be drawn,

Fig. 6. This further illustrates the value and importance of the ordinates and tangents.

Let the segment D be the ground plan. Enclose it by the tangents A B and B C. It is now required to project these to any given pitch, and show the angle they make on a flat surface. Assume B C as the ordinate: extend this, say to H. Let H O be the given pitch. Then the line H N being square with it, and the same length as the ordinate B C, shows that H N must fall level and rest on B C, while N F stands over B A, and on the given pitch H O. Then the tangents F, N, H, on the elliptic curve, give the exact angle as it stands in position over A B C, the plan. The minor axis of the elliptic curve being O V, which is equal to O A. These lines, when in position, range with each other, and O V falls level, the same as N. H.

This will be the case with the minor axis of the elliptic curve in every position: no matter what pitch or inclination a wreath may have, its minor axis, wherever situated, remains level. And this goes to show that there is no such thing in hand-railing as springing the plank, or throwing it up or down. It is simply the ordinate that changes the position of the major and minor axis on the surface of the plank.

Again, tangents which form either acute or obtuse angles on the mould can never be marked on the plank so as to run parallel with its edge on the major axis.

It follows, therefore, that the tangents on the surface of the plank must stand on these given pitches, and the minor axis fall exactly level; so that the edge of the plank in all positions makes a true and pefectly plumb line.

This is a fixed and unalterable law in hand-railing.

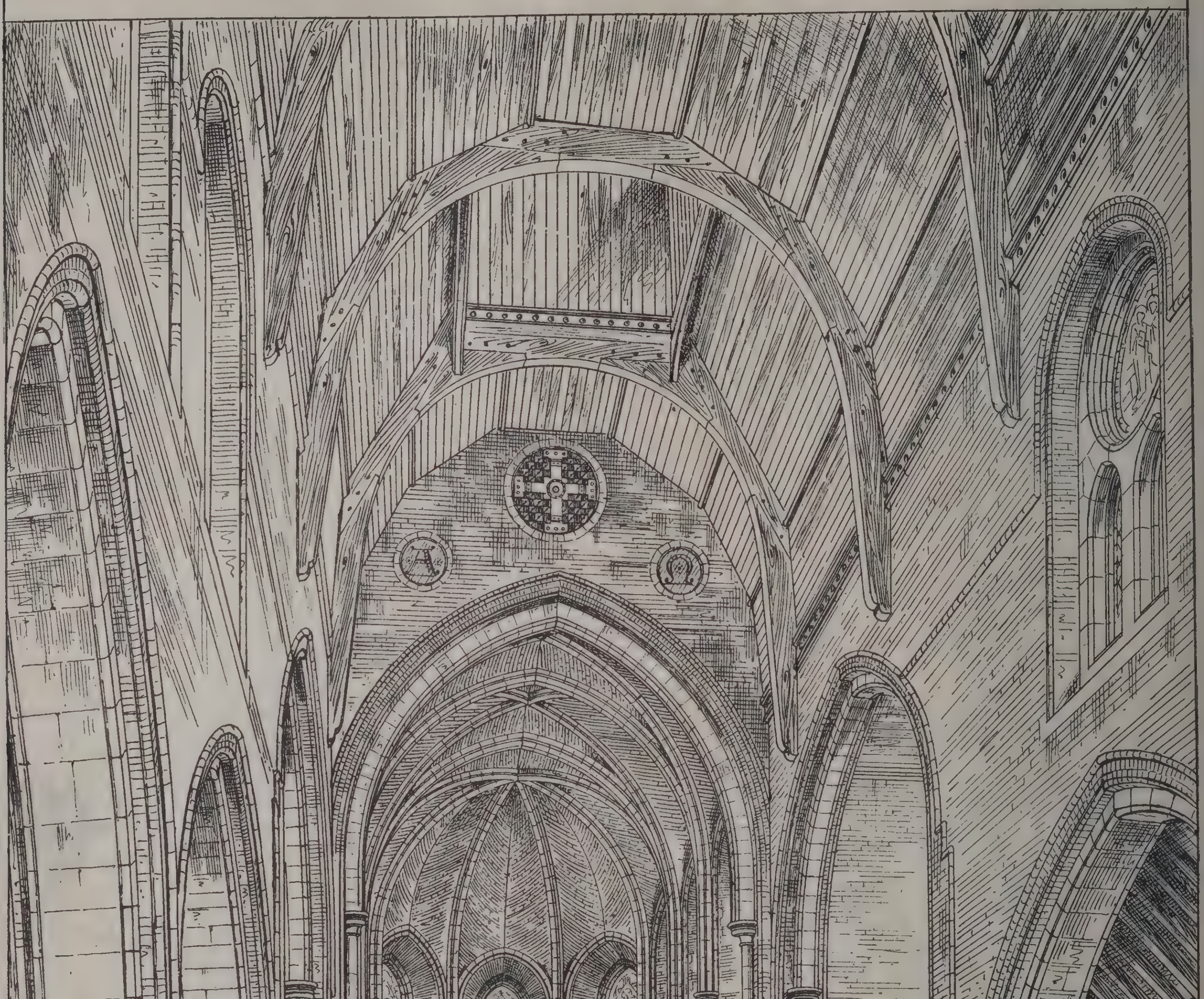
Fig. 7. Here we have B as the given plan; its circle enclosed by the tangents A B and B C, forming the acute angle; the construction being precisely the same as that of D, Fig. 6. Either of the tangents may be the ordinate; say B C; and the height C D the given pitch, as shown. Then D E, being the same length as the ordinate B C, shows that D E falls level; consequently L E must stand over B A, and the angle of projection is L E D.

These problems are not difficult to understand, there being nothing in them intricate or complicated; yet they are the very groundwork of constructive hand-railing.

Once more the learner is urged not to pass this plate without fully comprehending its intention and meaning.

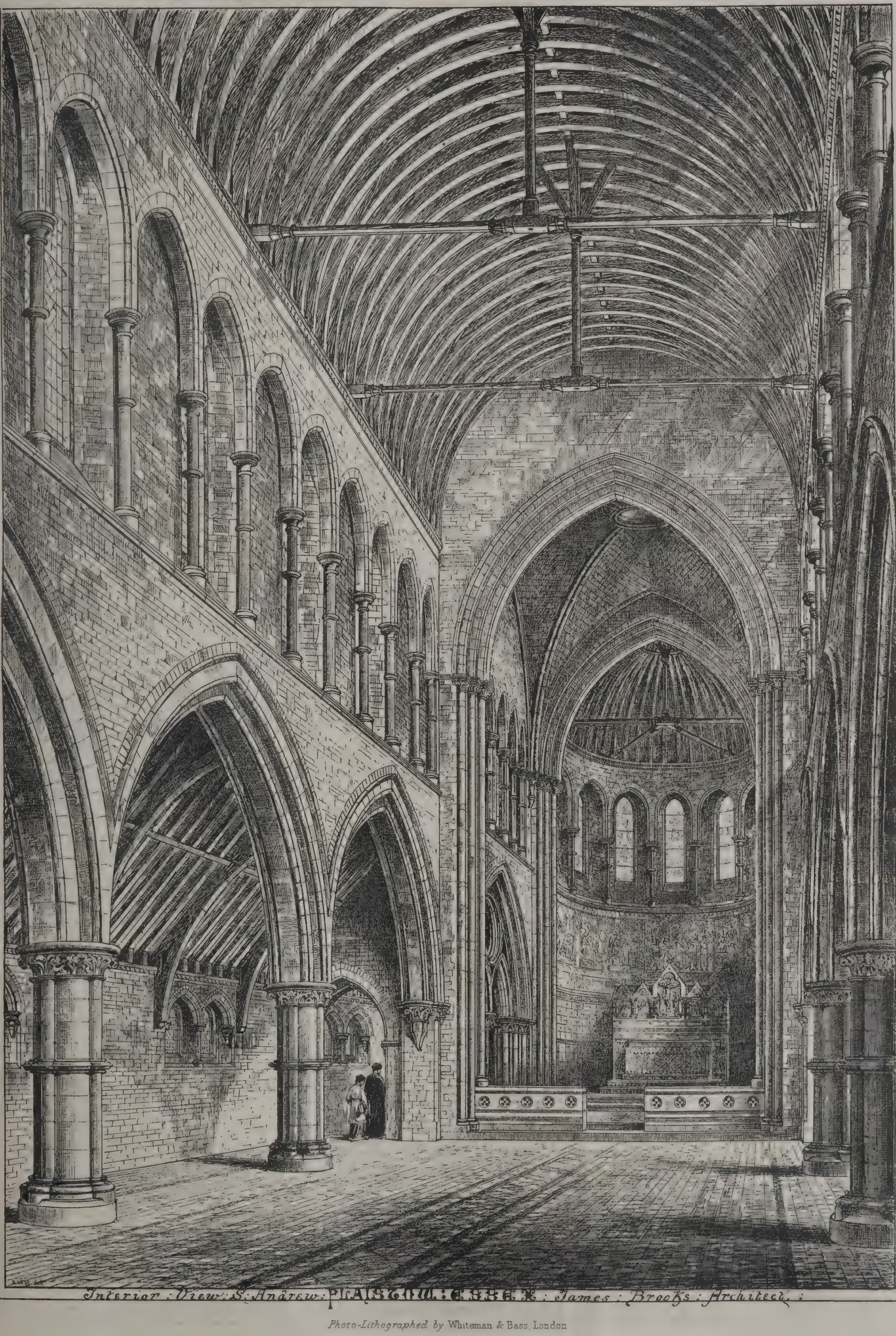
(*To be continued.*)

The engineers for the new foot-bridge at Barnard Castle are Messrs. Robinson and I'Anson, of Darlington, and the contractors are Messrs. Pease, Hatchinson, and Co., of the same town.



Interior: View: S: Chad: HAGGERSTON: James: Brooks: Architect

Photo-Lithographed by Whiteman & Bass, London



Interior : View : S. Andrew : PLAISTOW : ESSEX : James : Brooks : Architect :

Photo-Lithographed by Whiteman & Bass, London

Furniture & Decoration.

THE THEORY AND PRACTICE OF MODERN HOUSE PAINTING AND DECORATION.

By An Experienced Workman.

PREPARATORY PROCESSES.

(Continued from page 173.)

A VERY important branch of our subject is distemper painting—a kind of painting in which the colours are mixed with water and size. Various kinds of vehicles may be and have been used for this purpose, such as milk, white of egg, vegetable gums, flour, starch; in fact, almost any and everything containing gluten has been pressed into the service. Many kinds of animal size, as glue, are used; size made from parchment clippings; ordinary glue size, made from the hoofs of various animals, bits of skin, and all the refuse of the tanners' and knackers' yards; or glue made from fish bones, which is a fine clear glue, and is called Russian glue (it being principally imported from Russia). In the North of England a size is made by the tripe-dressers from sheep's trotters, and is called trotter size; this, when used fresh, and in good condition, is very clear, and equal to any size for mixing with distemper colour. In years gone by the decorator had to prepare his own size, principally from parchment clippings; and we are not sure but that this is the best plan yet, especially for special work, as we can then make sure of having it pure; for it often happens that distemper work will turn out bad, although the greatest care has been taken in mixing the colour and preparing the work, and we are quite sure that this often arises from some defect in the size used. Size is now made for sale in the state of a stiff and strong jelly, and sold by the hundredweight; consequently, something has to be added to it to prevent it putrifying or going bad, and we are not quite clear as to whether this preventive has not, in many cases, and in some peculiar states of the atmosphere, an injurious effect upon certain colours and mixtures. All decorators have had experiences of this sort, and we cannot account for them in any other way.

Distemper work, when well executed, is very much superior to oil colour in the pureness of its tone. Distemper is decidedly whiter than white lead in oil and will retain its whiteness much longer, and of course any tints of colour in distemper have a pureness of tone not possible of attainment by using oil colour, and therefore it is preferable to use distemper for many purposes on those parts of public buildings and dwelling-houses not liable to suffer from contact or wear and tear. The preparation of ceilings and walls for finishing in distemper is of vital importance to the ultimate result, inasmuch as if they are improperly prepared they will rarely turn out well at the finish. A great point to attain is to stop the suction, for except the finishing colour lays on cool and without any or with very little suction, the work is apt to be more or less rough, and will gather or accumulate more colour in one part than in another, and consequently will look shady. And here we may note a fact which shows the necessity for the use of a preparation. It will almost invariably be found that one part of a wall or ceiling will have a greater power of absorbing either water or oil paint than another part, which fact is most plainly seen in painting them with oil paint; in every case it will be found, even with the first coat of paint, that some parts will be glossy while other parts are dead—that is, the paint has sunk into or been absorbed on the dead parts, while on the glossy parts it remains on the surface (of course, in oil painting this is remedied by successive coats of paint). This arises from the unequal finish of the plaster work. Some parts are trowelled and pressed together more than others, and an unequal surface results. Now, in using distemper upon such plaster work it will be more quickly absorbed upon those parts which have not been sufficiently worked with the trowel, and the colour will, as a natural consequence, gather and accumulate on those parts, while it passes over those other portions which have been well trowelled, and thus we get a bad ceiling or wall; therefore it is necessary that we should cover the wall or ceiling with some preparation which shall stop and equalise this power of absorption, and without which no good work will result. As a consequence of these difficulties there are conflicting opinions as to the best methods of preparing both new and old ceilings and walls. Various mixtures are used with varying success; but we prefer to use the following mixture as a preparatory coat, viz.:—Mix about a dozen pounds of the best washed whiting with water to the consistency of a soft paste; add sufficient parchment or other size to bind the colour fast; add about 2oz. of alum and the same weight of soft-soap dissolved in water; mix well together in a pail (of course somewhat similar proportions will answer for any quantity), and strain through a coarse cloth or a metal strainer. The colour should now be tried on paper and dried before a fire, or otherwise, in order to test the strength of the size and see whether it is fast-bound, so that we can lay on the finishing coat without disturbing the first one. The alum and soft-soap assists us to gain this effect in a great degree, and helps to form a semi-impervious coating upon which the finishing coat will work cool and without suction. Caution must be observed not to have the size too strong, else it is very liable to chip, especially in rooms where much gas is burnt or heat evolved. A little suction is sometimes an advantage, but when the suction is great it is almost impossible to make a good ceiling. We often find it necessary to give both new and old ceilings one or two coats of oil paint before putting on the preparation, but on walls we have found that it is a bad practice, simply because distemper colour on walls, if prepared with distemper preparation, will give and take without injury, according to the state of the atmosphere. But if the distemper is put upon painted walls the absorbent power of the distemper is stopped; consequently, when a room is crowded with company, and much gas is used, the air is charged with moisture, which condenses on the walls and runs down the surface and discolours and stains the walls.

Old ceilings and walls require to have every particle of the old colour washed clean off, and all cracks or holes stopped up. Here we may note that whenever there is a bad crack in a ceiling, it is always best to cut the plaster away for about an inch on each side of the crack, and then plaster up the cavity with plaster of Paris and putty; we are thus enabled to make it level with the ceiling on each side, and the defect will not be perceived when the ceiling is finished. On the other hand, if we merely stop the crack without cutting it away, we leave a projection, because it will almost invariably be found that one side of the crack is lower than the other, and therefore, if only stopped, must form a ridge, except cut out as described above. Great care and pains should be taken to clear out all the whiting or colour from any ornamental plaster work, as distemper colour is apt to fill up the interstices and fine parts of all enrichments. In cleaning and washing them out, small brushes and pieces of soft wood of various shapes will be found useful; for except care be taken much of the ornament may be spoiled. When well soaked with water and carefully cleaned, this work may be got as sharp and clear as when new. We prefer in all cases to paint the enriched cornices and centres to a room, and finish them in flatting, for however careful we may be in using distemper upon such work, it is almost an impossibility to finish it without filling up the finer parts to some extent, and nothing looks so bad as ornament so filled up. We frequently see this done—one coat of distemper upon another, until the detail of the ornament is obliterated and spoiled—a species of barbarism which cannot be too strongly condemned. The same process of preparation will answer for old ceilings as well as new, with this difference, however, hat old ceilings may and often do require two coats of the preparation colour. Old ceilings are sometimes badly stained and discoloured, from the accidental overflow of cisterns, water-closets, &c. Many mixtures are used to kill or obliterate these stains. Cow-dung, lime and soap, and a host of other things are used, and much time and labour is lost, but the simplest, most economical, and most effectual cure is to give them one or two coats of oil paint; in fact, whenever a ceiling is badly stained or discoloured, wash it off and give it one or two coats of paint; it will save time and make the best job.

(To be continued.)

◆

THE CHURCHES OF S. CHAD, HAGGERSTON, AND S. ANDREW, PLAISTOW.

THE churches dedicated to S. Chad, Haggerston, and S. Andrew, Plaistow, which form the subjects of our illustration, have been recently erected from the designs of Mr. James Brooks, of 11, Serle-street, Lincoln's Inn.

Both churches have been built for neighbourhoods essentially poor, and though differing in character have been made to display one or two similar and particularly prominent features; first of all, the church being the really principal edifice of the parish in which it is situated, every effort is used to make this felt in its construction, and simplicity of material and detail are combined with breadth of design to give to it the imposing and massive appearance which its purpose and position demand. The principal element in the fulfilment of this intention is height, the ridge of the roof of each church being about 70ft. from the floor. In another similarity of design they also partake—that is to say, in their ability to accommodate large congregations on the ground-floor without the aid of galleries; by the employment of shallow aisles, the architect has also contrived to obtain for the congregation greater facilities than ordinary both for seeing and hearing.

In giving a more particular account of each church, we will, on account of priority of consecration, commence our remarks with a description of that of S. Chad, Haggerston. This church is situate in Nichol's-square, a short distance from the Hackney-road, and is built of brick, the facing of the exterior and interior being both of red brick with stone very sparingly introduced. All the string-courses are executed in moulded brick, as also the mouldings at edges of jambs and arches. The church consists of nave and aisles, north and south transepts projecting very slightly from the face of the main walls, chancel, north chancel aisle (used as an organ chapel), and south chancel aisle (used as a morning chapel), also two vestries for clergy and choir respectively. The entrance to the church is at the west end, by two doors communicating with a narthex. The nave is separated from the aisles by an arcade of four arches with boldly proportioned piers, and the whole of the light is derived from windows in the clerestory or at the clerestory level, there being none in the aisle walls. The nave and transept roofs are boarded on the under side of the braces and collars, so as to facilitate the transmission of sound. The chancel and south chapel have apsidal terminations, and both are covered with red brick groined vaulting, having stone ribs and carved bosses. Panels have been left beneath the windows of chancel for the insertion of subjects taken from incidents of the birth, life, and death of Our Lord. The altar, with a carved stone reredos, is placed at considerable elevation above the nave floor, and a dwarf stone screen-wall, having tiles introduced in various patterns on the surface, divides the nave from the chancel. The choir stalls are of oak, and the remainder of the seats are of pine. The whole of the floor area is laid with Staffordshire tiles. The accommodation is for 700 persons. Mr. W. Henshaw was the contractor for the erection of the church; the gas fittings were executed by Messrs. Hart, Son, Peard & Co.; and the choir stalls by Mr. A. Robinson, of Holborn.

The church of S. Andrew, Plaistow, is situate in the Barking-road, close to the part where it is intersected by the northern outfall of the Metropolitan Main-Drainage system. This church is constructed of Kentish rag, and is faced internally with the same material. It consists of nave and aisles, with chancel, north chancel aisle, transept on south side of church, a large and imposing tower, 31ft. square externally, and vestry in the south-east corner of the church, communicating with the south transept. The entrances are by a south porch and a deeply recessed and moulded western doorway, divided in the centre with a stone pier, having a canopy figure and pedestal on the exterior. The tympanum of the doorway is of stone, pierced with a quatrefoil light containing painted glass, of which the patron saint is the subject. The termination of the chancel is apsidal, and that portion of it which is beneath the tower is covered with groined vaulting in Kentish rag, and Bath stone ribs. An arcade is formed in the inside face of the clerestory walls behind the windows, and is continued at the same level on the west wall, as well also as behind the chancel windows. The tower remains at present at the level of ridge of nave roof, but the intention is to complete it as soon as the funds will permit. The altar and reredos are in this church also placed at great elevation above the nave floor. The reredos is especially rich in effect, and was a special gift to the church. It is of stone, enriched with carving and inlays of tiles, but is most noticeable for the fine figure-subjects, executed by Mr. Nichol, of Lambeth. The font at the west end of the church was also a special gift, and is of bold and massive design in various rich marbles, executed by Messrs. Burke and Co., of Regent-street. The floor of the choir and sanctuary is laid with Minton's encaustic tiles, and the whole of the remainder of the church with Staffordshire tiles. It is calculated that the church will accommodate 1,200 persons. The general contractors for the works were Messrs. Perry and Co., of Stratford; the gas fittings were executed by Messrs. Hart, Son, Peard, and Co., of Wych-street.

PRACTICE RATHER THAN THEORY.

THE question that has been raised in the last few numbers of our journal—that of the success or non-success of the competitive system for selecting candidates for Government appointments—is one of great importance and well deserving discussion. An incident which has recently come under our notice would lead to the thought that not only in the branches of the service we have alluded to, but in others, affecting greatly the political welfare of our nation, it is desirable that its working should be viewed with caution and criticised with discretion. A retired Indian officer informed us the other day that the mixture in the class of men now sent out to that our dependent province had been exceedingly prejudicial not only to the social status of the English there, which had, of course, a very great influence on the comfort and the character of those countrymen of ours who are necessarily thrown much together in a strange land, but also upon the ideas of the highly-observant natures among whom they are placed. To elucidate this, he informed us that a civilian of high standing, being recently about to leave the principality, was accosted by a native merchant, desirous of knowing who would be likely to supersede him, with the remark, "All that I hope is that it will not be one of those competition wallahs." Such a remark is pregnant with warning; the more so as the report has just arrived that insubordination has broken out in the native troops. We take no alarmist view, however, nor would predict any extensive outbreak from the circumstance that has occurred. We do not doubt that difficulties—if difficulties are to arise—will be met with courage and with zeal by the less refined, as well as the polished gentlemen, of our service in India; but we do think that if the prejudices of the nation are to be smoothed, and their esteem to be preserved, it can only be by sending among them such men as can command reverence by their pre-eminence in ability and love by the graciousness of their manner.

We had written *Practice versus Theory* as the text for our remarks, but upon second thoughts would not put them into opposition, but rather, as S. Paul contrasted faith with works, would point out that theory, without practice, is little worth, and practice, founded upon experience, is a guide generally to be safely recommended. Thus it is we felt that the failure which has attended the endeavour to find surveyors for government offices by competition needed to be noted for future profit. The calamity of appointing a man who has practically proved himself to be most untrustworthy for such a post, simply because he surpassed his competitors in theoretic knowledge of its requirements, has been escaped, as we happen to know, by a mere fluke. When, however, the present insane crusade against architects is over, we have little fear of the ultimate result to them. A body of men who have chosen their profession, and carry it on, for the most part, in a spirit of enthusiasm, the rules of whose Institute bind each one of its members to sign a declaration that they will conform their conduct to a lofty code of honourable etiquette, are not likely long to be set aside by an intelligent public, and the employment of quacks can never, we believe, be other than temporary.

VILLAGE WATER SUPPLY.

IT is hardly possible to over-rate the importance of village sanitary economy. Almost every summer there are gravel and chalk districts in this country, of large area, whose inhabitants during the best part of the hot season are positively in distress for want of water. We append a condensed extract from Mr. Denton's papers on this subject:—"The sources of private character which would be comparable with a public supply are:—1. Wells sunk down to a shallow depth, affording a constant supply of water, to be raised by a common lift-pump. 2. A running stream of unpolluted water passing the doors of the inhabitants, from which they can dip out all they require. 3. The storage of roof-water."

With reference to wells, he remarks that no privies or cesspools, nor leaky sewers, should exist within such a distance of the wells as will allow of the infiltration of excrementitious matter. Secondly, he says, where dependence is placed on a supply obtained by dipping from a stream running through a village, care is necessary to prevent surface defilement, and steps taken to lower the water standing in the soil.

About the storage of roof-water he observes much can be done by house and cottage owners by the provision of tanks, in which to collect and store roof-water. Assuming that if a private house, with its out-buildings, covers a space of 10 poles, the roof being of slate, and that the waters dripping from the roof are properly caught and conducted into the water tank, the private house will have the command of 28,280 gallons of water in a year; and assuming that the space covered by a farm labourer's cottage be 2½ poles, the roof of slate, the cottage will then be able to command 7070 gallons of water a year.

WATER SUPPLY BY PUBLIC CO-OPERATION.

"Failing sufficiency or proper quality from either of the three private sources enumerated, there remains to be considered how a village may be economically supplied by public co-operation. It is not improbable that, even where private sources now exist, a public supply may, under a combination of advantageous circumstances, be the cheaper means of service. The various means at command may be classified under the following heads:—1. The use of a constant or an intermittent supply existing above the village, and conducted to it by gravitation. 2. The raising of subterranean water lying beneath or near the village. 3. The use of a stream near at hand, but at lower level than the village, both as a supply and as motive power to raise the required quantity. 4. The use of steam-power in the place of other motors."

"The difference" (says Mr. Denton) "between a constant run of water and the supply to be gained from an intermittent discharge by the aid of storage is very great, both with respect to cost and quality; for as the supply to a village is comparatively small, and the opportunities of collecting it in any deep natural receptacle rare, recourse must be had to comparatively shallow reservoirs, which are open to the objection that vegetable and animal life thrive in them, and when they decompose render the water less pure. This objection is, however, met by constructing the reservoir in such a manner as will allow of its being emptied every year and properly cleansed. The proportion of the rainfall discharged by under-drainage during the winter from clay lands will not be less than 3½in., where the annual rainfall does not exceed 24in., and the proportion due to the winter is not less than 9 out of the 24in. This amounts to 79,183 gallons per acre. To supply a village of 400 inhabitants with 10 gallons each per diem, a total quantity of 1,460,000 gallons will be required for the year's supply, half of which (730,000 gallons) must be stored during the discharging period for use during the remainder of the year, with an addition of 50 per cent. for evaporation, waste, &c. By this means a village may be amply supplied with water all the year round, the quantity used during the winter being supplied direct from the outlets, and that of the summer from the reservoir. A reservoir capable of holding the quantity required would occupy about 4-10ths of an acre, assuming the depth of water not to exceed 10ft. The whole expense of constructing such a reservoir, with supply-pipes, &c., would probably not exceed £400 (putting a fair value on the land required), which, if repaid with interest in thirty years, would involve an average annual charge upon each dwelling of about 8s. if sixty dwellings composed the village. This is rather lower than the minimum rate which it has been already stated the labouring cottager can fairly afford to pay."

In regard to the second proposition, the raising of spring or subterranean water lying beneath or near a village, Mr. Denton says:—"The depth from which the water will have to be raised may vary very considerably in different formations but there is no limit to the height to which it may be raised if the motive power is appropriately selected. Three kinds of power present themselves for application—namely, horse, wind, and steam-power. Of these it is only intended to dwell upon wind as the most appropriate, if it be supplemented by horse-power when the force of the wind is not sufficiently great to drive the machinery. The cost of the wind-engine, with tank to hold 16,000 gallons, and all requisite appliances, would probably reach £750, including a supply-main down the village street for a distance of half a mile, but excluding connections with the dwellings. A cessation of the duties required by the wind would seldom last more than a fortnight at a time. When this should occur, a horse working half a day would suffice to furnish the village with the supply of 4,000 gallons, and thus two whole days' work would suffice to fill the tank of 16,000 gallons, or four days' supply. Where a stream is near at hand, but at a lower level than the village, and where it can be utilised both as a supply and as motive power, three descriptions of machinery present themselves for consideration. These are the hydraulic ram, the turbine and pump, and the undershot wheel and pump. The cost of the hydraulic ram, working with a fall of 8ft., and capable of raising daily, to a height of 40ft., and a distance of half a mile, 4,000 gallons of the same water by which it is moved, with a supply-pipe down the village street, half a mile long, and exclusive of the connections with the dwellings, would be £360. The turbine, working with a fall of 20ft., and capable of raising daily 10,000 gallons of water (taken from the stream, and filtered in its passage from thence to the pump well) to a height of 100ft., with pumps and raising-main for forcing the supply a distance of a mile, including supply-pipe down the village street, half a mile long, but excluding connections with the village, would cost £650. The water-wheel, capable of doing the same work as the turbine, but working with a fall of 3ft. only, instead of 20ft., with pumps, raising main for forcing the supply a distance of a mile, including supply-pipe down the village street, half a mile long, exclusive of house connections, would cost £750. Where none of the foregoing plans are available, the steam-engine forms the last and a never-failing resource. The kind of pump most suitable would be the double-acting lift and force-pump, or possibly three ram-pumps forcing water into one ascending main. To form a comparison between this description of power and that of wind or water, it will suffice to state that the first cost of a steam-engine to raise the same quantity, height and distance, as was assumed in the case of a turbine and wheel, would be £725; but with steam-engines the annual cost of fuel, stores, wear and tear of the machinery, and attendance, would amount to a considerable sum; while with rams, turbines, and water-wheels, worked by a constant flow of water, the annual outgoings are only nominal."

THE PATENT LAWS.

If we examine a long patent litigation, from its miserable commencement to its lamentable close, we perceive nothing but imperfect decisions appealed against and reversed, again appealed against and again reversed, recommenced with similar results—an absolute confusion out of which no side or party can see the end or issue, and in the end success of the party possessing the greatest tenacity and the longest purse. Look at the litigation which Mr. Bovill underwent, and during the progress of which he died; when brought to an end by the complete success of his executors the defendant was found to be a man of straw, and went through the Bankruptcy Court owing no other debts than the costs of this litigation and £3 for a water-rate.

What is the remedy for which inventors and patentees cry out aloud? Give us a competent tribunal, where our causes may be carefully heard and where authoritative decisions can be arrived at. The present courts are too crowded, their judges are overworked, the questions involved are too technical to be understood or weighed without professional knowledge, the present judges are bewildered, and the juries confused. When a patent case comes before a judge, does he not try to shirk it by every means he can? The array of models and scientific witnesses throws him into a terror. How can his mind, occupied by ten thousand other things, bring itself to understand and enter upon some subtle question in an act of which, probably, he has only hitherto heard the name! If there be this difficulty with the judge, how much more must there be with the jury, an assembly of men of ordinary but not refined intelligence! How can the grocer, fresh from his shop, decide some nice point in chemistry; or the baker, from his oven, weigh some delicate law of mechanics? The thing is absurd; and why the system should have so long endured is only another proof of the extreme conservatism of English institutions, and inelasticity of its boasted common law.

We believe that if a court were specially appointed for the trial of patent causes, presided over by a judge selected for his special technical attainments, and whose previous practice has been greatly in patent causes, and this judge were assisted by scientific assessors chosen for their special eminence in the various branches of knowledge, and that a jury be summoned of men possessing special knowledge of the matter in question—if one of chemistry, a jury of chemists; if one of mechanism, a jury of mechanics, and so on—that the patent system of England would no longer be a disgrace to her, that we should no longer hear of crude notions of its entire abolishment, and that the life of an inventor would need no longer to be spent in litigation.

WORKING MEN'S EXHIBITIONS.*

After nearly twenty years of experience it has been discovered that in order practically to interest working men in artistic and industrial exhibitions, they must be partakers in their management and share the rewards of success. At the Agricultural Hall, Islington, there is to be a display commenced during the present month, in which this principle will be, for the first time, amply recognised. Celebrated firms and large employers of labour will compete; but to every specimen of ambitious handicraft will be affixed the name of the artisan who wrought it, so that, by obtaining a prize, he will carry a perpetual certificate of skill, which can scarcely fail him, even in the worst of times. A few attempts of a similar kind have been made in England, but upon a limited scale, and under mistaken arrangements. At the Floral Hall, for instance, and at the Mechanics' Institute, in Leeds, working-class emulations have been seen; yet they bore an amateur and immature appearance. We regretted to find so much ingenuity and patience wasted upon elaborate patchwork quilts, representing every colour in the uniforms of the British army; tables and tea-caddies, combining a thousand pieces of wood; automaton chimes, and other monuments of devotion, illustrating a Chinese dexterity and perseverance, but not improving either the position or the capacity of the worker. At present we have no means of judging how far this or a different system has prevailed at the Agricultural Hall, but there is reason to believe that the emulation will be seriously and strictly industrial. It is to be international, as we have said. Now a great difficulty has always stood in the way of communication between the artisans of one country and those of another. The cost of travel is one obstacle. The want of a common language is another. The value of time, to people who, by daily effort, earn their daily bread, is a third. Still, as our superior working-classes will find in course of time, when more habituated to these rivalries, they are of immense, and even immediate use. We are kept out of many fields by that rarest of all sentiments—a national modesty. This point requires explanation, which we hasten to give. It is a popular idea, among us, that we can never hope to vie with the weaver of Lyons in the production of silk tissue. Why not? Lyons borrowed her cunning from Venice, buys a principal part of her machinery in Great Britain, and imports her raw material, as we do, from China, Persia, and Italy. At Paris, at Amsterdam, at Munich, at Wittenberg, at Leipsic, at Mayence, last year, specimens from the English loom were shown which by no eye could have been distinguished from the finest of French manufactures. So, too, with porcelain, with bronze, with all the fictile arts. We have been deafened out of self-respect by foreign praises of foreign wares, and have been in danger of forgetting that which in reality we ourselves have taught to half the world. Not, by any means, that we would counsel conceit or complacency on the part of our workmen when exhibiting; but a due consciousness of merit is a species of wholesome pride. Next week, no doubt, when the French and Italian artisans are among us, we shall recognise, in both, the signs of a peculiar genius, worth studying and deserving to be applauded. But, to get a true gain from a movement which, unquestionably, will grow into a European custom, we must trace for it the right direction, and point for it a practical end. In enforcement of this view we would indicate some specialities of International Exhibitions in the past. To begin with, they have not generally afforded fair play to the artisan; they have been too much dedicated to arts, to luxury, to fancy, fashion and the voluptuousness of civilisation. Then, flourishing and renowned houses, winning diplomas, gold medals, honorary mentions, and other awards, have completely drained out of sight the merit of the individual workman. What did we hear of him, the associate-artist of all the strong and beautiful elaboration, in 1851, in 1855, in 1862, in 1867, and in other years when the earth was supposed to be, in laureate language, "blessed with all the fruits of peace, and crowned with all her flowers?" This time, however, his toil, invention, and mastery over his craft, will be patent, and, while the employer will enjoy the credit of knowing a good workman, the workman can claim the credit of his own performance. This is as it should be. We shall witness greater results from a series of Working Class Exhibitions than even working men themselves are prepared for—all to their advantage, all to their elevation in the social scale. Let us refer to one episode. In 1868, the peat-cutters of the Belgian frontier—an entirely rural population, and the skilled mechanics of the Amsterdam building-yards—men utterly distinct in habits, culture and modes of thought, conceived together the idea of an International Exhibition on the banks of the Amstel. They wanted the one from the other to learn new lessons in industry and life; and, while excluding no class, they resolved that the Exhibition in the Dutch capital should principally represent their own. Their attention was given to houses and their materials, plans of dwelling-rooms, bed-rooms, kitchens, and yards; samples of mortar, cement, concrete, iron-work, and means of preventing damp, and foundations. They next considered cheap and useful furniture, and found that the world had a larger plenty for their comfort than they had imagined—seaweed for softening their beds, compressed tan to make warmth for their winters, and an infinitude of trifles, adding much, however, to the cheap facilities of their domesticity. So with clothing: they multiplied its economies for themselves. So with food: they detected eatable qualities in a thousand things hitherto despised. So, once more, with tools: they compared their own with the implements of other nations, and even learnt lessons from the flint axe of a thousand years ago. The art of life on the Continent is never lost sight of in working men's exhibitions. Nevertheless, it is perhaps true that their main and ultimate object must be the advance of the workman in his craft, and his power of triumphantly competing not only with his fellows from the Continent, but also with the necessities of his age. Much has been said and written of late concerning the importance of technical education. Mr. Samuelson, of Banbury, compiled for Parliament a very important Blue Book on this subject. In it he endeavoured to show that the British artisan was inferior in many respects to the French, the Belgian, and the German; the Russian, Spanish and Italian being *hors de concours*. Now there was a good deal of plausibility in all this. Workmen's mechanical schools, no doubt, abound more on the mainland of Europe than in these islands; but we are not aware of any failure which has been humiliating to the working class genius of England in the international competitions which have taken place. Indeed, it strikes us that this is not the real question involved. It is not whether we are outdone by rivals, but whether we might not outdo ourselves as we are, by what we are capable of being. To that result do these workmen's exhibitions tend, and in that prospect we must welcome them. The choral workman's song, sung in Dutch at Amsterdam, sets forth the idea, and, if a free translation may be pardoned, we quote from it one stanza:—

> No monster of iron, or gunpowder-fed,
> No clangour of steel, no whizzing of lead,
> Makes the blood in our arteries tingle;
> But the whirl of the wheel and the whistle of steam,
> And the bubbling hiss of the seething stream,
> Is the sound where our sympathies mingle.

Of course a Workmen's Exhibition may be intended to serve one of two purposes, or the two together. It may be designed to meet the many wants of his class which have hitherto been unprovided, or it may aim at extending his power over the materials which he has to manipulate, so that his ability shall exceed that of his rivals belonging to other nations. Or, we repeat, it may attempt both purposes. We are inclined to think that the former scheme is the more important. Taking the two, however, together, we may assign them to seven descriptions. The first is that of habitations. When the poor, herded in crowds, occupy common lodgings, mingling their wants and miseries, losing all sense of individuality and home, they become inevitably demoralized, and no work so good has been done on the Continent as that which has been done in connection with exhibitions, by teaching the industrious classes that their dwellings may be cheap and yet decent, humble and yet very comfortable. The Belgians and the Prussians are far in advance of all other nations in this respect, although the Dutch may claim a high pre-eminence on account of their model workshops. As to furniture, it may confidently be said that our working classes do not understand it at all. A Dutch or a German cottage inhabited by a family, the united earnings of which do not average 20s. a week, will exhibit a neatness, a snugness, and a completeness which we should look for in vain, as a rule, in the homes of our artisans. We should like to find some of our working class exhibitors turning their attention to the means of economising space, and securing ventilation in their abodes. In North Europe, in Sweden and Denmark, for instance, no such evil as that of foul air is ever heard of. Again, the idle time of continental workmen, apart from the Parisian, is rarely really idle. It is devoted to invention, to gardening, or to simple contrivances for the house, and that is a reason why so many more comforts are found in the Dutch or German cottage than in the English. In the matter of clothing, a great advantage possessed by the foreign artisan is that, having the raw material so much at his own door, his family have not yet given up the practice of manufacturing for him and themselves; but no doubt that is an exceptional circumstance of which we shall hear very little when capital and machinery have completed their conquests. The distaff is doomed at the first glance of the loom. It is, indeed—passing from the domestic necessities suggested by the varieties of a Working Men's Exhibition—the future control and improvement of the new forces constituting the industrial power of modern nations that is the chief object of emulation. It is the implement for fieldwork, for the workshop, for the factory, that is to be perfected; and if in our day an artisan discovers how to multiply and bring into more direct action these forces, he may win not only a medal or a mention, but a chance of fortune in its most worldly sense. We have witnessed of late years many proofs of this from among the dyke-builders of Holland, the most self-contained country in the world, China excepted; and its agriculturists and its net-makers have arisen rich firms which command the markets of Europe. The leather-dealers of Mayence, many of them not long ago only journeymen, have so profited by their skill that they have no competitors in Germany, and even supply our Australasian colonies. The opticians of Leipsic hold their ground against all comers. The Venetian glass manufacturer has his home in London—and not one of these industries exists which has not been promoted by the emulous spirit of international exhibitions. We would therefore counsel our mechanics to take these opportunities in good earnest, and to appreciate the chances they offer of general and personal advantage. The world knows too little of its workmen. Thousands of tasks finished by apt and patient hands, tender suggestions of form and colour, marks of thoughtful capacity and memorials of loving care, like that bestowed by Ascanio on his lily, abound in the workshops whence, hitherto, no name has ever issued forth to fame. It is with pleasure, then, we notice that in the forthcoming exhibition which Her Majesty has privately visited, and the Prince of Wales will open, the personal merits of the workman will be recognised. Indubitably while he demonstrates his own high quality he will perceive that he has much to learn from his fellows, and we trust, notwithstanding our denial of the idea that foreign workmen are, upon the whole, superior to ours, he may yet be so unprejudiced as to acknowledge that something may be taught to him by the Frenchman, the Dutchman, or the German. How is it that we cannot make *articles de Paris?* How is it that we are utterly beaten in toy-making by the manufactories of Nuremburg? This localisation of peculiar industries is among the most unintelligible of phenomena. A workman's exhibition brings it, however, before the workman's eye, and sets him reflecting upon his position in the great race of industrial nations. At an exhibition he can see clearly on what course, and for what prizes, he is first, second, or third, or not placed at all. We have every confidence in the prowess of our exhibitors at the Agricultural Hall, but would prefer that our mechanic should look to the exhibition less for triumph than for teaching.

---

* From the *English Mechanic*.

◆

STRASBURG AND RHEIMS CATHEDRALS AND THE WAR.

THE Cathedral of Strasburg has already suffered injury from the effects of the *feu d'enfer* poured upon the place; and the case may arise, nay has arisen (it has already been threatened in Strasburg), that cathedrals may be deliberately sacrificed to the necessities or vengeance of war. The greatest risk, however, of course is from misadventure and carelessness. As the *Daily Telegraph* well says:—"A stray shell may shatter to atoms the delicate lacework of Strasburg spire, or smash the magnificent stained glass of Rheims. Either of these towns may be set on fire, and, as the old S. Paul's of London attested, flames do not spare the mightiest creations of the architect. Or when the towns are bombarded at night, and when the shells are pitched half at random, the great churches may be made a mass of ruins before the besiegers find what havoc they have wrought. And whatever mischief may be done to Rheims or Strasburg is done for ever. Money and skill, it is true, might repair the rents in towers, or even cunningly imitate the soft and sombre glory of oriel window; but, after all, the result would be only patchwork and only imitation. The value of Rheims and Strasburg springs in great part from the fact that they link the present to a darkly remote past, of which they are the saintliest symbols, and of whose holiest longings they give the most vivid revelation. We prize the temples of mediæval religion, not merely because they bear the stamp of incomparable beauty, but because they wed us to the past by the tie of consecration. Their beauty we might copy; their wealth of historic association we could never produce. If Westminster Abbey were levelled to the ground we might rear a building exactly the same in form, and give it even the mellow hue of age; but the structure would not be the Abbey of history—the coronation and the resting place of our kings—the church in which is deposited the dust of the greatest among Englishmen. As the holiest symbols of a great past, the ancient cathedrals stand under the guardianship of civilization itself, and hence the whole world of educated and religious men looks with dread to the desolation which war may work at Strasburg or at Rheims."

◆

COMPETITIONS.

Bombay.—We learn from the *Bombay Gazette* that at the annual general meeting of the Mechanics' Institution, held on the 14th of August at Bombay, a gold medal, with 300 rupees from the President on behalf of the municipality, was awarded to Mr. F. W. Stevens, C.E., for his design, &c., for native baths and wash-houses. There were six other competitors for the prize. The Municipal Commissioner intends adopting Mr. Stevens's design, with a slight modification, in two or three places in Bombay. Mr. Stevens was formerly a pupil of Mr. C. E. Davis, F.S.A., of Bath.

Winchester.—It is now definitely settled (says a local paper) that the new Town-hall for Winchester is to be erected on the Globe Inn site, which is to be purchased for £1,550. The Town-hall Committee recommend that £12,000 be the sum fixed for the building. The Town Council have empowered the Committee to advertise for designs, plans, and estimates for the proposed building, and to offer a premium of £50 for the best design. It is to be an instruction to the architect that the building must include a room capable of seating 1,000 persons.

◆

SCHOOLS OF ART.

Ryde, Isle of Wight.—After many struggles and considerable expense, the committee have found the difficulties in the way of the establishment of a school of art in this town insuperable, and have determined to make no further attempt for the establishment of an art school in Ryde. The great difficulty was in the getting of a suitable building, which is a *sine qua non* with the South Kensington authorities.

Yarmouth.—Mr. J. S. Dominy, who for several years has held the position of master of the Government School of Art at Yarmouth, has obtained a more lucrative appointment at York. He has been succeeded by Mr. J. F. Ryan, from the Central School, South Kensington.

◆

ARCHÆOLOGICAL.

North Oxfordshire Archæological Society.—The North Oxfordshire Archæological Society has just visited Burford, whose fine old church is now being restored under the superintendence of Mr. G. E. Street, A.R.A. The church is dedicated to S. John the Baptist. Its chancel and nave are of great length, with tower between and transepts on either side, with several large chapels grouping around, and it has a large-chambered porch. Its architecture is chiefly Perpendicular, but in parts it is Norman and Early English. The lantern and west door are Norman, and the porch on the south is Late Perpendicular, and of exquisite details. After inspecting the church, some of the party went to the bridge and thence to the Priory. After dinner a paper on the Priory was read by the Rev. J. H. Burgess, vicar of Burford.

Archæological Excursion to the Herefordshire Beacon.—The Archæological Section of the Midland Institute have arranged for an excursion to the camps on the Herefordshire Beacon and Midsummer Hill, Malvern Hills, on Monday, the 12th instant. A Midland train will leave New Street Station at nine a. m., arriving at Malvern Wells about eleven a. m. From thence the members of the section will walk to the Beacon Camp, a distance of about three miles. Luncheon will be provided on the hill about one o'clock, after which Mr. H. H. Lines, of Worcester, will conduct the members of the section over the camps, and will read a paper describing them. Dinner will be provided at Malvern at six o'clock, and the members will return to Birmingham by the train leaving at eight p.m.

Roman Millstones.—Mr. Blair, an antiquary residing at Oundle, has lately been in possession of a pair of Roman millstones which were recently discovered in Car Dyke, between Eye and Peterboro', by men who were digging for water for cattle. They were upper and nether stones, weighing from 40lbs. to 50lbs., and were formed of a sort of lava stone. One was perfect, and the other was fractured so as to be easily joined. They have been sent to the Northampton Museum.

Opening of Tumuli in Northumberland.—The Rev. Canon Greenwell, of Durham, and Mr. C. H. Cadogan, of Brenkburn Priory, Northumberland, have completed the examination of three tumuli situate upon the Harbottle Castle estate (the property of Mr. P. Clennell), Northumberland. The first tumulus was a cairn of stones, 32 feet diameter and 2 feet high, but some stones had been removed. There was a circle of large stones round the base. At 7½ft. east from the centre there was found a deposit of burnt human bones on the natural surface, in a heap rather over a foot in diameter. At 3ft. S.E. by S. from the centre, and 9in. above the natural surface was another similar deposit, and immediately below it, and upon the old surface, was a third, very much burnt, the bones few in number, but evidently those of a separate burial. At 5ft. N.W. of the centre was a large stone, naturally present, and deeply fixed in the ground. From this stone the cairn had been commenced, the other stones being laid against it, as from a centre—all flat stones set on edge—and the second deposit of burnt bones was just beyond these stones. The second barrow was 24ft. diameter and 3½ feet high—a cairn perfectly undisturbed. At 4ft. S.S.E. from the centre was a deposit of burnt bones 8in. above the natural surface. At 5½ft. S.S.E. from the centre, in a hole sunk one foot into the ground, was another burnt burial, the body having been burnt upon the spot. At the centre was a cist of four stones on edge, with a cover filled with fine sand. At the east corner of the cist was a "food vessel" on its side, with mouth to the south, and facing a hollow to be presently mentioned. At the south-east end were some burnt bones and charcoal, but the cist probably contained an unburnt body. At the south corner of the cist was a hollow, as if the remains of the impression made by the skull. The "food vessel" is flower-pot shaped, and in perfect condition, and is ornamented externally with lines arranged herring-bone fashion with horizontal rows of dots between. The third barrow was 24ft. diameter and 3ft. high, made of stones. At 8ft. S.E. of centre was a burnt burial in a hole lined with flat slabs of shaly limestone, and at the bottom two sandstone slabs, and on the top two covers and a large stone over all. The burial urn contained the remains of two or more bodies. At 8ft. E.S.E. from the centre was a deposit of burnt bones on the natural surface of the ground. At 5ft. E. by S. from centre was a small plain urn, upright, with much charcoal about it, and between this urn and the hollow there was much sign of burning. At 4ft. S. of the centre was another burnt burial, two pieces of flint being among the bones, one part of a "scraper," and part of a bone pin, burnt also. Just S.E. of the bones and a little above them was a large urn, upright, enclosing a smaller urn. The large urn had a reticulated pattern of thong markings. At the centre of the barrow was a burnt body and another urn, and two flints. The pottery obtained is of great interest.

◆

Building Intelligence.

CHURCHES AND CHAPELS.

Barton-le-Street.—The ancient Norman church of Barton-le-Street, near Malton, dedicated to S. Michael, had become so ruinous through length of years and neglect, that its repair became hopeless, and Mr. Meynell Ingram, of Temple Newsam, the proprietor of the parish, has determined to rebuild it as a memorial to his deceased father. Messrs. Perkin and Son, of Leeds, were employed to prepare the necessary plans, and the work was let, Mr. John Thornton, of Slingsby, being employed as mason, and Mr. John Tomlinson, of Leeds, undertaking the carpenters' and other work. The sculpture is entrusted to Messrs. Maw and Ingle, of Leeds. The whole work is being executed under the persona supervision of Mr. Isaac Newton, the clerk of the works. The new church is of good proportions. There is a fine Norman porch on the north side and a vestry abuts on the chancel on the south side. The interior dimensions of the nave are 54ft. 6in. by 20ft. 6in. The chancel is 20ft. 6in by 16ft. 6in. The bell turret at the extreme wes end of the church will be 50ft. high, and sur mounted by a Norman cross. The porch is very rich in Norman sculpture, principally old work. The exterior walls of the nave and chancel are strictly Norman in their style, and in the interior a very large amount of ancient carving is introduced in the string-courses, the window moulds, and other parts, and the wall plates are supported by ancient corbels. The old chancel arch had been destroyed, but the new one is very rich, and is strictly worked from remnants of old work found in the church. The windows throughout are circular-headed. About three hundred ancient stones, richly carved, are worked into the new structure, and the new sculpture is adapted, as far as possible, to the old style. The nave is to be covered with thirty-two ribs of red wood, cleaned and moulded, the intervening spaces being filled in with boarding. The form of the roof in the interior will be circular. The chancel will be roofed in the interior with oak ribs, in panel work, richly carved. The stone used for the building is from the Whitby and Appleton quarries.

Dundee. — The Restoration of the Old Steeple.—Mr. Gilbert Scott, who lately inspected the Old Tower, Dundee, with a view to its restoration, has forwarded a report on the subject to the local committee. Mr. Scott supposes the tower to date from the close of the fourteenth century, when Scottish architecture assumed a very distinctive and national form. He is of the opinion that the original termination of the tower was after that of S. Giles', Edinburgh, the resemblance of the upper stages of the two towers being most marked. The Dundee tower, however, was much the best in design, which led him to think that at Edinburgh must have been of a little later date, and imitated from it. He was unable to discover when the original termination was removed, and the present uncouth house substituted. The house, he supposed, was erected as a watch-house in the time of Henry VIII. or Edward VI. The tower, as a whole, he said, was in a substantial condition, but externally it was much decayed. After referring to various details in regard to restoration, Mr. Scott concluded his report by recommending the employment of a thoroughly practical mason and an efficient clerk of works to undertake the necessary work. The cost of restoration would be at least £5,000, and possibly might exceed that sum. It is calculated that £3,300 has been subscribed; and if this is found to be the case, operations at the tower will be immediately begun.

Fenton Chapel.—The cost of erecting this chapel was not £4,000 as mentioned last week, but £2,640.

Gloucester Cathedral Restoration.—The restoration of Gloucester Cathedral has now been carried out, under the supervision of Mr. Gilbert Scott, on as large a scale as the funds will permit. The south porch has been nearly completed; the rich front of tabernacle work has been faithfully reproduced, and niches for statues, with beautifully carved canopies, have taken the place of the modern dial. Mr. Redfern, of London, is carving 14 statues for the porch. The aisles of the choir have been carefully cleaned and repaired, S. Andrew's chapel has been finished for some time, S. Paul's chapel is being completed, and the renovation of some of the other chapels is in a forward state. The magnificent roof of the choir has been coloured by Messrs. Clayton and Bell. Messrs. Farmer and Brindley, of London, have undertaken the carving of the woodwork of the choir; and Mr. Scott will proceed with the restoration of the sedilia, and prepare plans for the reredos, for which the Freemasons of the Province have subscribed £650. The south transept is nearly ready for the stained glass in its great south window, and the repair of the north transept has been begun. The estimated cost of the whole work is £45,000, whereas the total amount paid and promised up to the present time, even including £5,000 given by the Dean and Chapter, is only £14,157. Already some £6,000 has been expended, while estimates accepted for the choir and south porch exceed £4,000 more.

Jarrow.—On Monday afternoon the foundation stone of a new Wesleyan Methodist chapel and school was laid near the new railway station to be erected at Jarrow. The plans have been made by Mr. F. R. N. Haswell, North Shields, in the Italian style, the chapel to be built of brick with stone dressings. The building is calculated to accommodate from 800 to 900 persons. The estimated cost is about £3,000.

Little Cowarne.—The parish church of Little Cowarne was re-opened on Tuesday week, after restoration under the superintendence of Mr. F. R. Kempson, architect, Hereford. The work of restoration has comprised the entire re-building of the east and south walls of the chancel and the re-building in part of the south wall of the nave; the opening out of the chancel, which was formerly separated from the nave by a very small and insignificant arch; and the substitution in place of the latter of a lofty and handsome arch nearly the entire width of the chancel. The tower has also been thrown open to the nave, and has been raised 10ft. The work has been carried out by Messrs. Morris and Bufton, of Ocle Pitchard, at a cost of £500.

Little Marcle.—The new church of S. Michael, Little Marcle, was consecrated last week. The church is in the Geometrical style, and comprises nave, chancel, north porch, and vestry on the south side. The material used is native red sandstone, with Bath stone dressings. The roofs are covered with Broseley tiles. The whole of the work has been substantially executed by Messrs. Wall & Hook, contractors, of Brinscombe, near Stroud, from plans by Mr. J. W. Hugall, architect, Oxford.

Llanerfyl, Montgomeryshire.—The parish church of S. Erfyl has been re-opened, having been re-built on the old site. The new church consists of nave and chancel, western bell turret, vestry and south porch. The old nave roof has been restored and refixed, and the font repaired and provided with a cover. Local stone has been used for the walling, and shelvoke for dressings. The open seats are of pitch pine ;the chancel stalls, pulpit, lectern and other fitings of oak from the old church. Messrs. Maw & Co. have supplied the encaustic and enamelled tiles for the reredos and floor within altar rail. The single light window in the west gable is filled with painted glass by Messrs. Done and Davies. There is provision in the new church for about 200 persons. The total cost of the building is £1,500, and the work has been carried out by Mr. Morgan, of Llanfair Caereinion, from the designs of Mr. E. Haycock, junr., architect, Shrewsbury.

Munslow.—The church of S. Michael, Munslow, Salop, was re-opened on the 19th ult. by the Bishop of Hereford, after restoration. The church, which consists of tower, nave, north aisle and chancel, is of very ancient date, and of various styles of architecture. The interior of the old church was much disfigured by a ceiled roof, an unsightly gallery, and high pews; these have all been removed. The new pews are of oak, with carved heads of old wainscoat oak. The removal of the west gallery disclosed a fine old Norman arch, formerly hidden, and opens a view of the full length of the edifice. By the removal of the gallery is also gained a good view of a memorial window of stained glass (by Done and Davies, of Shrewsbury), the gift of the architect, Mr. S. Pountney Smith. The walls of the church, and the pillars and arches of the arcade, have been scraped, and the plaster which disfigured them has been removed. In removing the thick coat of plaster from the chancel end of the south wall, a staircase, leading to the old rood-loft, was brought to light, and is now fitted with oak doors with ornamental hinges and ring handles. The church has been re-roofed, but the character of the old roof has been retained, and the massive old beams, side-pieces, and principals replaced. The church has been laid throughout with encaustic tiles, by Mr. Bathurst, of Broseley. The old wooden pulpit has been removed, and a stone pulpit by Mr. John Cross, of Shrewsbury erected in its place.

Newark, New Jersey, U.S.—The Right Rev. Dr. Bayley, of Newark, U.S., has lately visited London to consult Mr. Goldie upon the proposed cathedral and Bishop's residence to be erected at Newark, from the designs of that gentleman, in connection with his partners Mr. Child and Mr. O'Rourke, of Newark. The cathedral is to be dedicated to Our Blessed Lady and S. Patrick, and is to be erected in the earlier and purest form of mediæval architecture, of which Mr. Goldie has already raised up such striking specimens in the pro-cathedrals of Westminster and Beverley. The plan will be that of a perfect cathedral, vast nave and aisles with flanking chapels, two western towers, and spires with the mortuary and baptistry chapels in the basements, and a noble atrium, or porch, stretching across the whole width of the nave between them; transepts with apsidal chapels, and a choir with aisle making its entire circuit, and giving access to the Lady Chapel at the extreme end of the cathedral. The total length of the church will be over 300ft, the width of transepts being 120ft., and the lofty spires will rise to a height of nearly 300ft. The local materials, freestone and brick, will be employed, and probably polished granite for the shafts. The bishop's house will be attached to the cathedral by a cloister, and will be commenced early next spring, and the foundation stone of the cathedral will be laid soon after.

Ripon.—The foundation stone of a new Congregational Church at Ripon, was laid on Friday last. The church will have a tower and spire at the south-west corner, 100ft. high, and will afford sitting accommodation for 600 adults. Mr. J. P. Pritchett, F.R.I.B.A., of Darlington, is the architect, and the cost, including schools and a minister's house (which will adjoin the church), will be £3,000.

Silksworth.—On Wednesday week the corner stone of a new church, to be dedicated to S. Matthew, at Silksworth Colliery, near Sunderland, was laid by the Countess Vane. The new church, which is situate midway between the village of Silksworth and the colliery, will be of Early English Gothic character, built of limestone, with freestone dressings; to contain free sittings to the number of 250, and to cost £1,800.

Tyldesley.—A new Congregational Church, in High-street, Tyldesley, was opened on Wednesday week. The church is of brick, with polished stone dressings, and is Gothic in style. Sittings are provided for 550 persons. Beneath the church are schools for 400 children. Mr. Atherton, of Bolton, is the architect. The entire cost is about £2,200.

BUILDINGS.

Birmingham.—New lodging-houses for working men have been fitted up in Summer-lane, Birmingham, and will be ready for occupation on Monday next. The premises have been adapted to their new purpose by Mr. Jas. Williams, architect, New-street; and are under the superintendence of Mr. T. Brown, who has had long experience in the management of lodging-houses.

Bolton.—The old Wesleyan School, in Moss-street, Bolton, has been pulled down, to make way for more commodious school buildings, from plans by Mr. T. Ormrod, architect, of Nelson-square, Bolton. The foundation stone will be laid to-morrow (Saturday).

Clifton.—A new library has just been added to Clifton College, by the munificence of the Rev. John Percival, the head-master. It is from the designs of Mr. C. F. Hansom, the College architect, and consists of two floors, the ground one being devoted to a couple of class-rooms, about 23ft. square. Over the class-rooms is the library, which consists at present of four bays, 49ft. by 23ft., but will eventually be carried on to a fifth, now used as a temporary office for the secretary, and will then be 62ft. long. This will be fitted up with bookshelves running out at right angles from the walls, and dividing each bay into separate compartments. The principal architectural feature is an elegant open timber roof, with hammer-beam principals, supported on wooden columns with moulded capitals and bases. The general contractors for the work were Messrs. Wilkins & Sons.

Halifax.—Stannary Congregational Church Schools.—The above schools have just been satisfactorily completed. The style adopted is Gothic, severe in character, and apparently designed for stability and convenience. It is so arranged as to answer admirably the joint purpose of a chapel and school, pending the erection of a new Congregational church on the site adjoining, when the large room now devoted to public worship will be used as a school-room only. The ground floor is divided into class-rooms, ten in number, which range down either side of a central corridor leading from a spacious hall, and connecting the front and back staircases. A chapel-keeper's house is also provided for on this and the basement floor. The first floor is approached from the hall by a good wide stone staircase at the west end. There is also a staircase at the east end, intended principally for ministers and choir. The large room, with its galleries and vestries, occupies the whole of the first floor, and is 85ft. 6in. by 42ft. in the clear. It is light, lofty, and well ventilated, and is spanned by an arched-principal hammer-beam roof, rising to the clear height of 38ft. to the underside of the collar, and is a remarkably fine specimen of its kind. The minister's platform and gallery front are executed in pitch pine, and are of a very bold and elaborate character. The large room, class-rooms, &c., are effectually heated by hot-water apparatus, supplied by Messrs. W. & S. Thornton, of Huddersfield. The large room, exclusive of vestries, will accommodate 750 adults, and the class-rooms below will seat 540 scholars with comfort. The contractors are all local, and the building, which has been erected at a total cost of £3,750, has been carried out from the designs and under the superintendence of Messrs. Horsfall, Wardle, & Patchetts, architects, Halifax.

Market Drayton.—New premises for the Manchester and Liverpool District Banking Company have just been erected in Cheshire-street, Market Drayton. The building is Gothic in character, substantially built of a red stone and yellowish brick, and is seen from all sides. Great care has been taken by the architects in designing the building to have each front equally good in detail. The building is two stories high, covered by a high-pitched slated roof, with ornamental finials. The banking-room is 33ft. long by 24ft. wide, the counters and desks being specially designed to accord with the style of architecture of the building. Messrs. Swindells & Little, of Manchester, have been the contractors, and Mr. Harrison, clerk of the works; Mr. Fox, of Market Drayton, has done the plumbing, glazing, and gas-fitting. Messrs. Barker & Ellis, of Manchester, are the architects.

Nottingham.—The theatre at Nottingham, a plan of which we illustrated some time since, has, since June 24, undergone a thorough renovation. The massive pillars of the proscenium have been removed, and the whole design of that part altered and improved, and small private boxes built at the sides of the balcony circle. This has wonderfully improved the interior, which, in every other respect, has been proved to be as complete as could be wished. The new work has been decorated by Mr. George Gordon, of London, who has also painted a new act-drop. The decoration of the fronts of the various tiers, the ceiling, and Mr. Holliday's charming frieze, have been carefully cleaned, and the small running ornament painted on the mouldings and cornices freshened by a little stronger colour. Some spacious refreshment and supper-rooms have been built, in addition to those in the theatre previously. The builders' work has been done by Mr. Wright, of Nottingham, and the whole has been designed and superintended by the architect of the theatre, Mr. C. J. Phipps, F.S.A., of London, the cost being about £1,500.

Sheffield.—The Duke of Norfolk laid the corner-stone of a new music hall at Sheffield on Thursday week. The architecture of the building will be Italian in character, and the interior will be elaborately decorated. Accommodation will be provided for from 2,500 to 3,000 persons.

South Shields.—On Wednesday week Earl Percy laid the foundation stone of S. Peter's National Church Schools, South Shields. The buildings will comprise boys' school, 46ft. by 20ft., girls' school, 44ft. by 20ft., with convenient class-rooms and a covered playground, and will be capable of accommodating 300 scholars. The contract, amounting to £1,513, is in the hands of Messrs. Sopwith & Kent, of North Shields; the designs having been prepared by Mr. F. R. N. Haswell, architect, of that town.

Staveley.—The Midland Railway Company has just erected a new locomotive shed near the Staveley Station. It is a very commodious building, capable of holding twenty-four large locomotives, and the tanks, mess-room, and offices adjoining are conveniently arranged. Mr. J. E. Hall, of Nottingham, was the contractor, and the cost has been £20,000.

◆

The Grand Prize of Rome.—The "Death of Messalina" was the subject given in competition for the Grand Prize of Rome this year. The winner is described as not 20 years of age; he is a pupil of M. Cabanel. The inferior honours of this class are due to Mathieu, another pupil of M. Cabanel. "Samson with the Lions" was the subject of the competition for the prize in sculpture. M. A. E. Charles was successful. M. A, Jacquet won the prize for engraving, and M. Thomas that for an architectural design of a school of medicine.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

To Our Readers.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

Letters relating to advertisements and the ordinary business of the Paper should be addressed to the EDITOR, 31, TAVISTOCK STREET, COVENT GARDEN, W.C.

Advertisements for the current week must reach the office not later than 5 p.m on Thursday.

W. Mc E., D. J. W., J. C. J., A. G. H., J. H., M. V. and M., J. H. R., J. H., J. N., J. P. S., C. B. A., S. and Son, J. M. G., H. G.

J. W. T.—See article this week on "Hand-railing," which will be followed by several others.

S. O.—Please send view and plan.

J. T. M.—Drawing returned. Too many sketches of Norman doorways sent before.

S., Son, and R.—Plan of mansion to hand.

J. C., Jun., must take the slight responsibility, if there be any.

A Subscriber for Fifteen Years.—Apply to the Turkish Embassy, 1, Bryanston-square, London.

C. A. J.—The sketches will be returned.

◆

Correspondence.

ARCHITECTS' CHARGES.

(*To the Editor of the* Building News.)

Sir,—I had a case about nine months ago similar to that mentioned by "Young Architect." A freeholder wished to have a cottage built on a portion of his ground, and applied to me to prepare him some designs for his choice, cost not to exceed £200. I, expecting to do the job, sent him three plans and elevations in different styles, with approximate estimates for each. He replied, thanking me for the designs, and stating that he had already engaged another builder. I sent him in a bill for two per cent. of the total cost of the three, and took proceedings in the county court, and obtained judgment for one per cent. I shall be happy to furnish your correspondent with further detailed information.—I am, &c.

Country Builder.

Sir,—It were almost amusing, if it were not painful, to read such inquiries as that of "A Young Architect" in yours of this day, To read such, one might suppose we were living in Timbuctoo or New Caledonia, instead of in a country where, more than in any other, law and order are maintained. The law of England guarantees to every subject fair payment for honest work, and, therefore, if his client will not give him that, I advise, as the result of my experience, that he lose no time parleying, offering references, &c., but issue a writ forthwith. The client will then be compelled within twelve days either to pay the amount in full, or as much as he admits due, or else to show good cause for withholding payment. Of course the architect should do this through some respectable solicitor.

The Institute scale will inform him fully what he has a right to charge; and though for a long time it was pretended that this scale "would not be recognised, could not be enforced," &c., recent cases, and in particular the case of "Ebdy *v.* McGowan," reported in your columns, have shown that, when properly proved, the courts will regard this document as binding and authoritative, and direct verdicts in accordance with it.

If he takes firm and decisive action, the client will probably "cave in" at once, unless he be peculiarly obstinate or ill-advised. Young architects are often told "they ought on no account to go to law, &c." And certainly neither they nor anybody else should do so rashly or unnecessarily. But if people will not pay on one or two civil requests, what else are you to do? How would my tailor or your printer act if their claims were not duly honoured?—I am, &c.

Wm. Fogerty.

8, Buckingham-street, Strand, Sept. 2.

ARCHITECTURAL CUSTOM.

Sir,—Would you kindly inform me if it is a custom in the architectural profession for an employer to dismiss an assistant with a month's notice after a twelvemonths' engagement has been entered into. An answer to the above query through course of post will greatly oblige a constant reader of your valuable paper.—I am, &c.,

John Y. M'Intosh.

Birmingham, Aug. 31.

Intercommunication.

◆

QUESTIONS.

[1938] TURKISH BATHS.—Can any one inform me if there is any work published, and by whom, how to construct a Turkish bath, or who would be likely to supply working details for the construction of one?—John Scott.

[1939] COTTAGE HOSPITAL.—Can you or some of your readers give me a description of a cottage hospital?—X. Z.

[1940] BREACH OF CONTRACT.—A vicarage being to let I was asked by a mason to tender for the carpenters' and joiners' work on the understanding (verbal, but with witness) that if he got the contract I was to do the above work. He got the contract and appointed a time when I was to sign the agreement, but previous to the signature he informed me that the plans and specifications not being to hand we must wait until their arrival. Subsequently he let the work to another firm of carpenters and joiners. Can you or any of your correspondents say if any, and what compensation I can recover against him? I expected to have made about 8 or 10 per cent. by the job.—G. W.

[1941] ORNAMENTAL INLAY.—In the Building News for December 10, 1869, directions are given for ornamental inlay. I have tried the molten lead poured into letters cut in marble, but the heat of the lead causes the marble to burst; the centres of the letters O and A are all burst out. Would some reader oblige me by describing the method? Can the lead be softened so as not to require so much heat to melt it?—A Mason.

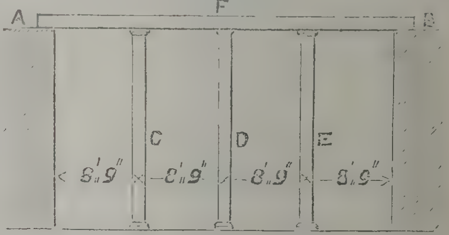
P.S.—What is "colophony?"

[1942] REMOVING WHITEWASH.—Will you oblige a four years' subscriber by inquiring through your "Intercommunication" column the most effectual way of removing old whitewash from the face of stonework, especially from the small holes made by the mason's pick when dressing?—Foreman.

[1943] WALL BUILDING.—Will some of your "practical" readers be kind enough to tell me if a hollow wall constructed 4½in. on face. 2½in. cavity, and 9in. brickwork internally, is in accordance with the proper construction of such walls, and what ties should be used?—B. F.

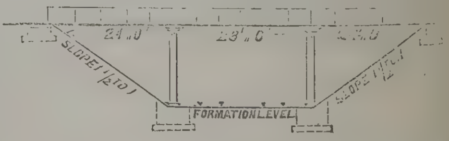
REPLIES.

[1921] LOAD ON IRON COLUMNS.—The question raised by "Student," in "Intercommunication" column, is apparently difficult, but in reality very simple, provided it is commenced properly. The only point to be determined is the distribution of the load, and the manner in which it affects the columns. It has not been stated by "Student" at what distances apart the three columns are placed, but there is no doubt that the whole space of 35ft. is equally subdivided, as represented in the sketch I have given. The total load carried by the bressummer will consist of the front wall of the building, half the weight of the floors of the front rooms, and half the weight of the roof, and this load will be divided among the columns as follows. In the first place let us take the distance along the bressummer from A to the first column C. Manifestly half of the load situated on this part will be supported by the wall at A, and half by the pillar C. Similarly, half of the weight situated between the columns C and D, or between any two of them, will be borne by each respectively. But the distance between the pillars, measuring of course from centre to centre, is 8ft. 9in., or a quarter of the whole span from wall to wall. Each pillar carries therefore a quarter of the load, and if we call this W, the distribution is $\frac{W}{8}$ at the walls A and B, and $\frac{W}{4}$ at each of the three pillars. The actual load must of course depend upon the height of the wall, and the character of the building, but "Student" will now have no difficulty is calculating the strength of the columns. Let him bear in mind that his load upon the columns must not be greater than one-sixth of the breaking weight for cast-iron.—T. C.



[1924] ASPHALTING.—From experience I can inform your correspondent that amateur asphalting always comes to grief, especially when performed upon a scale so large as he mentions. His best plan is to get the Pyrimont Seyssell people to lay down what he requires, and he will have a good job made of it once for all.—S. K. P.

[1926] CARRYING A STREAM OVER A RAILWAY.—The simplest means of taking any water over a railway is to make the bridge act as the aqueduct as well. This is the manner in which the main drainage is taken across



the Great Eastern Railway near Abbey Mills pumping station. I have given, for the information of "Contractor," a sketch showing the arrangement. There is no necessity for placing columns in the middle of the "six-foot," as the span is comparatively small. The girders should be of the plate form, and the riveting and joints done very carefully, as the work must be watertight.—Engineer.

[1927] PILEDRIVING.—"Balk" should place a piece of wood on the head of the cast-iron piles, and he will be then able to drive them without their breaking off short. From the circumstances of the case I am inclined to think that screw piles would have been the proper things to use. The driving of cast-iron piles is always precarious work.—L. M. N.

[1928] TESTING CAST-IRON—It would scarcely be possible in testing small specimens of cast-iron to observe the deflection without the aid of delicate and expensively constructed instruments. The best plan will be decidedly to break them by either an actual weight at the centre, or by help of a lever. The approximate breaking weight can be readily calculated from the equation $W = \frac{A \times D \times C}{L}$, in which W is the breaking weight at the centre, A the area in square inches of the bottom flange of the girder, D the depth, and C, a constant equal to 26, and L the span between bearings. It must be borne in mind that D and L must both be in feet or in inches.—Calculus.

[1932] SKETCHING IN THE TOWER.—For permission to sketch generally apply to the Constable, F.M. Sir T. F. Burgoyne, 8, Gloucester-terrace, Bayswater, W.; for admission to the armouries, to the Secretary of State for War, War Office, Pall Mall, S.W.; and to the Hall Tower, to the Lord Chamberlain, Lord Chamberlain's office, Stable-yard, S. James' Palace, S.W. A fair amount of work may be picked up in the subsidiary towers, but scarcely anything beyond thick walls to be got out of the keep.—C. S. W.

LEGAL INTELLIGENCE.

Important Decision under the "Building Act."—Mr. Abraham Cohen, builder, of Southgate-road North, on Wednesday week appeared to a summons at the Lambeth Police Court for refusing to pay £2 1s. 3d. due to Mr. C. A. Long, the district surveyor for S. Mary, Newington, and part of Lambeth. Mr. Long said he surveyed the alterations made to the Jewish Synagogue, Walworth-road; but although he sent several times to defendant, he refused to pay the amount of fees. Defendant said there had really been no additions or alterations to the building within the meaning of the Act. Before the building was completed it was found that the roof was too heavy, and caused the walls to bulge. In consequence, three buttresses were built. Those matters were, he contended, necessary repairs, and did not entitle Mr. Long to the fees. The magistrate said, according to defendant's own version, it was clearly an alteration to the building, and not a repair, as meant by section 9 of the Act. Mr. Long said that section referred to necessary repairs, and nothing affecting external or party walls. The roof was found to be not sufficiently strong, and extra supports had to be put in. The walls bulged so dangerously that brick buttresses were obliged to be erected, and iron rods inserted to tie the work together. The magistrate said it was quite clear the case for the complainant had been made out, and he should make the order for payment of the amount, with 2s. costs.

A Builder Committed for Manslaughter.—Mr. George Hall, builder, of Hardingstone, Northampton, was last week committed on a coroner's warrant to take his trial for the manslaughter of William Hill, a mason's labourer. Mr. Hall was engaged in repairing a house in the Kingsthorpe-road, and a large hole or opening, giving access to a flight of stairs leading to a cellar, was left unprotected, and the plaintiff, in going to fetch his tool-basket, fell into the hole and fractured his skull. The jury, on the evidence adduced at the inquest, returned the following verdict:—"The jury are of opinion that the deceased came by his death through the negligence of Mr. Hall in not properly securing the hole." The coroner remarked that the verdict was tantamount to a verdict of manslaughter against Mr. Hall. He thought it proper, under the circumstances, that the case should go before another tribunal.

WATER SUPPLY AND SANITARY MATTERS.

Brighton.—At a meeting of the Brighton Sewers Board on Tuesday last, a communication was read from Mr. Hawkshaw, C.E., offering to undertake the superintendence of the work, and prepare drawings and specifications, for £4,000, being 5 per cent. upon his estimated cost of the work. The offer was accepted.

Castle Northwich.—New water works have been erected for this increasing township near Moss Hall Farm consisting of a well 6ft. in diameter, which has been sunk to a depth of 32ft. and indicates every appearance of yielding an ample supply of pure water. In the engine house which has been built over the well is a high pressure horizontal engine, which lifts the water into a water tower built on the high ground near the Wimington Branch Railway, the lift being 115ft. The tower is circular, and 48ft. in height. On the top is a wrought-iron tank, 25ft. in diameter, and 10ft. 6in. in depth, and contains, when full, 32,000 gallons of water, or an estimated supply of a day and a half. The contractors for the several works were Mr. C. Shaw, of Castle, for the erection of the tower, engine, and boiler house and chimney; Messrs. Milburn and Sons, of Staleybridge, for cast-iron pipes and tank; Mr. E. Sharp, of Lancaster, for valves and hydrants; Mr. J. Nutton, of Elland, for laying pipes; and Messrs. Holdford and Shepherd, of Hyde, for the engine and boiler. The works were designed and carried out by Mr. Henry Bancroft, C.E., of Manchester.

Darlington.—The Darlington Town Council met on Thursday week, when the town clerk read a letter he had written to the Home Secretary, urging that the council could not decide immediately as to the best means for the disposal of the sewage otherwise than by running it into the Skerne and the Tees in the present unsettled state of the question. The Secretary of State, on the 22nd of August, replied that the plea urged for delay could not again be entertained, and called upon the council to prepare a complete scheme for applying the system of sewage irrigation before Oct. 31st, or, failing to do so, he would appoint some competent person to carry out the work. It was agreed to refer the matter to a committee to meet without delay. The Commissioners for the Polution of Rivers intimated, in a letter read from the town clerk, that they would attend at Darlington to examine into the condition of the Tees and the Skerne at the commencement of October.

Jersey.—Dr. Lankester has been spending his holiday in Jersey; and, finding the sanitary condition of that beautiful island far from what it is represented to be, he has liberally given the inhabitants a lecture, which was attended by the Governor and principal inhabitants. Jersey ought to be the healthiest place in the kingdom; but its average deathrate is 22 per 1,000, equal to that of London; while among the 29,000 inhabitants of S. Helier the death-rate has reached the high figure of 26 per 1,000. The water-supply from wells seems to be scanty and defiled.

Rugby.—An important sanitary experiment is being carried out at Rugby. The whole of the sewage of the town, of which part formerly polluted the Avon, is now used for irrigating the fields. It is stated, in a recent special report to the Privy Council by Dr. Buchanan, that the health of the children living in the midst of the irrigated districts, far from suffering, has actually improved.

STAINED GLASS.

Westhoughton.—A stained glass window has just been placed in the chancel of the new church at Westhoughton, to commemorate the munificence of Mr. John Seddon in rebuilding the church. The window, which is in five lights, is by Messrs. Clayton and Bell. The subject is the Te Deum. In the base of the central light is represented "Our Lord Crucified," and above is "Our Lord in glory, sitting at the right hand of God." The side lights are filled up with representations of apostles, prophets, martyrs, and "the holy church throughout the world." The wheel light in the pediment is filled with an emblematical representation of the Holy Ghost—the Dove—round which are angels, and on each side the cherubim and seraphim. Beneath the window is an inscription.

STATUES, MEMORIALS, ETC.

Liverpool.—The equestrian statue of the Queen to be erected by the Corporation in front of St. George's Hall is completed, and in a few days will arrive from the bronze foundry of Messrs. Elkington and Co., of Birmingham, by whom it has been cast. It will be remembered that shortly after the erection of the statue of the late Prince Consort which now adorns the southern extremity of the open space fronting the hall, the Corporation resolved to erect a companion statue of the Queen, at a cost of £5,000. Mr. Thorneycroft was the artist approved by her Majesty for the execution of the work. The granite pedestal on which the statue will rest has long been finished.

Our Office Table.

The Alexandra Palace and Park.—A third, and let us hope a more fortunate attempt, is about to be made to open the Alexandra Palace and Park to the people of North London. The effort is being organised by Mr. Francis Fuller, of Whitehall Gardens. It is proposed to form a company for this purpose on the Tontine principle, with a capital of £650,000, in fully paid-up shares, of 20s. each, with power to issue debentures bearing interest at 5 per cent. per annum, to the amount of £150,000 if necessary. The shareholders first registered up to the amount of £500,000 will be those alone entitled to the ownership of park, palace, and contents, which it is estimated will be worth, at the close of the Tontine in 1880, about one million and a half sterling.

The Great Western Railway.—The line between the Hammersmith Junction and the Westbourne Junction is being considerably widened in order to keep the main-line traffic distinct from that of the Hammersmith and City traffic. A station, to be called the Harrow-road Station, is contemplated in the garden of Mr. F. G. Saunders, the secretary of the company. The alteration of the gauge from the broad to the narrow has just been effectually completed on the Wycombe branch, and the local service of that line will be carried over the narrow gauge to and from London.

The Whitworth Scholarships.—The practical examinations for the Whitworth scholarships were commenced on Tuesday week and finished on Friday last, at the works of Sir Joseph Whitworth & Co., Manchester. There were 33 candidates, all of whom had previously qualified by passing in the theoretical examinations of the Science and Art Department. They were examined in the handicrafts of turning, fitting, and pattern-making, and in the use of the various classes of mechanical tools. The results of the examination were inspected by Sir Joseph Whitworth, Mr. E. J. Reed, late chief constructor of the Navy; Professor Greenwood, principal of Owens College; Mr. M. Kirtley, locomotive superintendent of the Midland Railway Company; Mr. Wright, chief engineer of the Navy; Mr. Manby, secretary of the Institute of Civil Engineers; and other gentlemen. The results of the examinations will be ascertained, and the names of the successful candidates made known in the course of a few days.

Improvement of the Thames Navigation.—The extensive and important works undertaken by the Thames Conservators in the re-construction of a new lock below Windsor Bridge, are completed. The work is very substantial, and has been carried out at considerable expense, towards which the Crown contributed £2,000, as it will tend to prevent the flooding of the Home Park.

Windsor Branch of the Amalgamated Society of Carpenters and Joiners.—The members and friends of the Windsor Branch of the Amalgamated Society of Carpenters and Joiners held their fifth anniversary on Tuesday week. From a statement read by Mr. Lawton, it appeared that the income of the Branch during the past year had amounted to £318 3s. 11d., and the expenditure—the principal items in which were:—donations and travellers, £47 7s. 8d.; tool benefit, £11 9s. 11½d.; sick benefit, £32 13s. 8d.; remitted to other branches, £119—showed a total of £257 5s. 1d., leaving a balance in hand of £60 18s. 10d.

American Railway Items.—The greatest year for railway construction in the United States was 1869, in which 5,000 miles were laid. The next year to it, in rank, was 1856, in which 3,640 miles were constructed. The 5,000 miles of road constructed during the last year cost 150,000,000 dols., or about 30,000 dols. per mile. Massachusetts has the most railways in proportion to its superficies and its population. It contains 1,489 miles of iron road on a surface of 7,800 square miles, or about 100 miles to every 526 square miles of territory. Were all the railways in that State laid down in parallel lines they would be but 5¼ miles apart, and were the entire territory of the Union as closely marked with railways as Massachusetts it would contain 600,000 miles of iron track. The new depot of the Hudson River and Harlem, in New York, will be a magnificent affair in size as well as finish. It is built chiefly of iron and glass, and it will require 8,000,000lbs. of iron, and 100,000 square feet of glass. The roof is 200ft. by 652 feet. It is expected to be completed by the first of January.

Encounter between a Liverpool Architect and a Burglar.—Somewhat later than his usual hour, on Tuesday evening week, Mr. J. N. Crofts, architect, of Cook-street, Liverpool, was sitting in his office writing, when he heard the lock of the room door tried twice. On going into the lobby he encountered a tall powerful fellow, who had by some means broken into the lower part of the building. Mr. Crofts at once seized him, and a long and severe struggle ensued, during which Mr. Crofts was thrown to the ground several times, but he continued to hold the fellow until the arrival of a policeman. On being brought up before the magistrates the man was remanded.

Improvements at Halifax.—On the 15th ult. the formal opening of the new road from Halifax to Southowram, and of the western half of the new North Bridge across the River Hebble, took place. The Mayor presided at the ceremony, giving the name of Beacon-hill-road to the new highway. The road has cost £12,000, and the bridge, when completed, will have cost £20,000.

The Proposed Great Western Maritime Ship Canal.—The projected Great Western Maritime Ship Canal is now attracting considerable attention. According to the *Mining Journal*, the capital required to construct it (£3,500,000) will no doubt soon be asked for from the public. The success of the Suez Canal has given increased confidence to the promoters in the practicability of their proposition. The construction of the canal would do much to open up a much enlarged market of South Wales coal in all the counties south of the line of the Thames, and would diminish the distance between the South Wales coalfield and the various French ports, avoiding, at the same time, the principal difficulties of the voyage. The canal is to be 59 miles long, and 21ft. deep, the width being at the bottom 31ft., and gradually increasing to four times that width at the surface, It will extend from Bridgwater Bay in the Bristol Channel to Exmouth on the south coast of Devonshire, and it is estimated that from

4,000,000 to 5,000,000 tons of coal will be taken through annually. A harbour of refuge is proposed to be established in connection with the canal. The project originated with Telford in 1825, and it is now being promoted principally by Mr. F. A. Owen.

◆

Chips.

Mr. William Stork Beckit, the architect of S. Martin's Church, Lincoln, writes to say that the statement in our last issue that the lowest tender for the erection of the church was £2,000 above his estimate is untrue, the lowest tender being only £250 above his estimate. Our statement was taken from the *Lincolnshire Chronicle* for August 26.

The Melton Mowbray new Cattle Market was opened on Tuesday last.

A new Free Church, seated for 300 persons, was opened on Sunday week at Lumphanan, Deeside, Aberdeenshire.

A new Temperance Hall is in course of erection in the Cleethorpes-road, Grimsby, from plans by Mr. G. Siminson. The cost will be upwards of £1,200.

Three groups of stone carving in basso relievo, executed by Mr. Ruddock, of London, may now be seen on the south porch of S. Swithin's Church, Lincoln. The three groups refer to various events connected with S. Swithin's history, and the cost is to be defrayed by the architect, Mr. Fowler, of Louth.

On the 22nd ult. the employés of Mr. George Punnett, builder, Tile House Works, Tunbridge, held their annual holiday, when about 160 of the home department visited the Crystal Palace. On the same day about 160 men of the same firm, and now employed at Hawkhurst in the erection of a mansion for the Right Hon. G. J. Goschen, M.P., President of the Poor Law Board, had an excursion to Hastings.

The original chancel arch of S. Peter's, Cumberworth, Alford, has been restored, and a new arch of Ancaster stone added. Columns which had been plastered up in the walls many years were brought to light. Other improvements now in progress are a new roof of Baltic timber, supported by twelve braces, on corbels; a new two-light north window, in character with the original, and modern benches instead of the old high pews. It is also proposed to build a new porch.

A handsome new tower, together with a spire and clock, in connection with the parish church of Rothes, is now all but completed. The total cost will be about £200.

The works in connection with the Serpentine are now reported as being pushed vigorously forward. The contractor has now engaged a large additional number of men, who are actively engaged for many hours per day.

The site selected by the Corporation of London for the Foreign Cattle Market is situated on the West side of Deptford. It has not yet been approved of by Government, and it is possible a larger frontage may be deemed desirable.

The inhabitants of Kew and Brentford have appointed a committee to take steps for freeing Kew-bridge from toll, in accordance with the act of 1869.

About two-thirds of the capital required for the erection of the new Town-hall and Museum at Nairn has been subscribed.

The church and congregation worshipping at Sion Chapel, Bridge-street, Bradford, of which the Rev. J. P. Chown is pastor, are engaged in the task of raising funds for a new chapel and schools, at an estimated cost, including the site, of not less than £12,000. The plans for the new buildings are now under consideration.

The Corporation of Glasgow made a profit of £19,619 on the supply of gas to that city last half-year. Of this amount the greater portion will go to wipe off the expenses of the transfer from the old companies, and £5,000 will be credited to the ordinary funds of the Corporation. The ratepayers of Glasgow are to be directly benefited by a reduction in the price of gas.

On the 25th ult. the foundation stone of a new Wesleyan Chapel was laid at Earl's Barton. The estimated cost is £1,050.

Two memorial stones of a new Baptist Chapel were laid on Monday week at West Coseley, Bilston. The contract for the new chapel, exclusive of heating apparatus, is £1,150.

It is in contemplation to insert a new stained glass window in the choir of Hereford Cathedral.

The foundation stone of new Wesleyan Schools at South Stockton was laid last week. Accommodation is to be provided for 300 children, at a cost of £600.

The foundation stone of a new Wesleyan Chapel was laid at Weymouth on Wednesday week.

Savernake House, near Marlborough, Wilts (the seat of the Marquis of Ailesbury), is now receiving important additions. The right wing, hitherto incomplete, is in the hands of an army of workmen. The outlay will be about £10,000.

S. Peter's Church, Dover, East Cliff, has been reopened after restoration. The elevation of the roof has been increased, and the chancel and north transept extended.

The Rector of Hadleigh, Suffolk, is soliciting subscriptions towards the restoration of the parish church. Mr. Valpy, architect, has surveyed the building, and estimates the cost of the proposed works at £1,100.

The Portland Stone Company lately took on about 30 additional men for a roach order, but these have since been stopped for a time.

It has been decided to restore the Lady Chapel of Chichester Cathedral, as a memorial to the late Bishop Scott.

S. Helen's Church, Ore, near Hastings, was consecrated on Friday last.

The Earl of Zetland has laid the foundation stone of a new Masonic Hall at Redcar. The style of the building will be Italian.

◆

Timber Trade Review.

PRICE CURRENT OF WOOD.

(From "Churchill & Sim's Circular.")

Baltic fir timber ......per load 50 cubic feet	s.			s.	
Riga	65		to	75	
Dantzig and Memel, crown	85		,,	100	
Do. best middling	75		,,	85	
Do. good middling and second	65		,,	70	
Do. common middling	57		,,	62	
Do. undersized	55		,,	65	
Do. small, short, and irregular	50		,,	60	
Stettin	57		,,	65	
Swedish	53		,,	58	
Do. small	47		,,	50	
Swedish and Norway balks	35		,,	40	
Baltic oak timber, Memel crown	115		,,	135	
Do. brack	90		,,	110	
Dantzig and Stettin crown	105		,,	130	
Do. brack and unsquared	75		,,	85	
Wainscot ....per log, 18 cubic feet					
Riga crown	85		,,	100	
Do. brack	50		,,	55	
Memel and Dantzig crown	80		,,	85	
Do. brack	40		,,	47	
Deals and battens .... per Petg. std. 100	£	s.		£	s.
Archangel	11	10	to	12	10
Do. seconds	9	0	,,	9	10
Petersburg	12	0	,,	13	0
Wyburg	9	15	,,	10	5
Finland and Handsawn Swedish	7	0	,,	8	0
Petersburg and Riga white deals	8	10	,,	9	10
Memel and Dantzig crown red deals brack		none			
Christiania deals, best sorts, yellow white	10	0	,,	12	10
Norway deals, other sorts	7	0	,,	8	0
Do. battens, all sorts	6	0	,,	7	10
Swedish and Gothenburg good stocks	10	0	,,	11	0
Do. common and thirds	9	0	,,	9	10
Gefle and best Swedish deals	10	10	,,	12	5
Swedish battens	8	10	,,	10	10
	s.	d.		s.	d.
Dantzig crown deck ......per 40ft. 3in.	17	0	,,	21	0
Do. brack	12	0	,,	16	0
Flooring boards............per square of 1in.					
First yellow	7	6	,,	10	6
Do. white	7	0	,,	9	6
Second qualities	6	0	,,	7	0
Matched boards (per sq. ⅝in. and 3in.)	5	0	,,	7	6
Firewood ....per cub. fthm.	s.			s.	
Swedish red deal ends	75		to	85	
Norway red and white borrds	60		,,	70	
Do. round and slabs	45		,,	55	
Lathwood ....per cub. fthm.	£	s.		£	s.
Petersburg	5	10	,,	6	10
Riga, Dantzig, Memel, and Swedish	3	15	,,	5	10
Oak staves......................per mille pipe	£	s.		£	s.
Memel crown	180	0	,,	185	0
Do. brack	130	0	,,	150	0
Dantzig, Stettin, and Hambro' full-sized crown	140	0	,,	150	0
Canadian standard pipe	75	0			
Do. puncheon ....per 1200 pcs.	22	0	,,	23	0
Bosnia single barrel ......per 1200 pcs.	31	0			
United States, pipe	35	0	,,	45	0
Do. hogshead, heavy and extra	30	0	,,	35	0
Do. slight	20	0	,,	22	0
Indian teake ....per load	13	0	,,	13	10
African oak	6	0	,,	7	0
British Guiana greenheart	6	0	,,	7	0
Cuba sabicu	6	0	,,	8	0
Australian ironbark	6	0	,,	6	10
American timber........................per load	s.			s.	
Red pine, Quebec (for yards and spars)	75		to	95	
Do. mixed and building	50		,,	65	
Yellow pine, Quebec, large	80		,,	90	
St. John's and board pine	80		,,	95	
Building sizes	60		,,	70	
Oak, Quebec	120		,,	130	
Do. United States ......(nominal)	80		,,	100	
Elm, rock	85		,,	105	
Ash	70		,,	80	
Masts, red pine	80		,,	105	
Do. yellow pine, large	80		,,	105	
Do. Oregon	120		,,	160	
Do. New Zealand	100		,,	130	
Birch, Quebec, large	75		,,	100	
Do. New Brunswick and P.E. Isle	63		,,	70	
Do. small averages	50		,,	60	
American deals............per Petg. std. 100	£	s.		£	s.
Quebec pine, first quality, floated	16	0	to	17	0
Do. second	12	0	,,	12	10
Do. third	8	10	,,	9	0
Do. first quality, bright	18	0	,,	19	10
Do. second	12	15	,,	13	10
Do. third	9	0	,,	9	10
New Brunswick mixed pine	7	0	,,	8	0
Canadian spruce......per Petg. std. 100					
Do. first	8	15	,,	11	0
Do. second	8	5	,,	8	15
Do. third	7	15	,,	8	0
New Brunswick first	8	5	,,	8	15
Do. second	8	0	,,	8	5
Do. third	7	5	,,	7	10
Unsorted	7	15	,,	8	10
Nova Scotia and P.E. Isle	7	0	,,	7	10
Battens, spruce	7	0	,,	7	10
United States pitch pine planks	12	0	,,	13	0
Mahogany ....per foot superficial	d.			d.	
Honduras ....cargo average	4¼		to	4¾	
Mexican ....do.	4¼		,,	4¾	
Tabasco ....do.	4½		,,	5½	
Cuba ....do.	7		,,	10	
St. Domingo ....do.	7		,,	10	
Do. Curls	16		,,	24	
Cedar, Cuba.............................. (nominal)	6½		,,	7½	
Do. Australian ....do.	4½		,,	5½	
Do. pencil	2		,,	4½	
Maple bird's eye	4½		,,	5½	
Walnut, Italian	4½		,,	5½	
Do. Canadian	2½		,,	3	
Satin wood, St. Domingo	9		,,	12	
	£	s.		£	s.
Do. Bahama .... per ton	5	0	to	6	0
Do. East India	5	0	,,	6	0
Rosewood................................per ton					
Do. Rio	15	0	,,	25	0
Do. Bahia	13	0	,,	20	0
Tulip wood	12	0	,,	18	0
Zebra wood, Brazil ....(nominal)	8	0	,,	10	0
Do. Puerto Cabello	6	0	,,	7	0
Ebony, Ceylon	6	0	,,	10	0
Lignum vitæ, City St. Domingo	5	0	,,	10	0
Do. Haytian ....(nominal)	2	0	,,	2	10
Do. Bahama	5	0	,,	8	0
Cocus wood, Cuba	5	10	,,	6	10
Boxwood, Turkey	4	0	,,	15	0
Lancewood spars, fresh		10	,,		14
Do. ordinary to fair		5s.	,,	7s. 6d.	

The last quotations for timber and deals at Hull and Grimsby are as follows:—

	£	s.	d.		£	s.
Memel best timber ....per load	4	10	0			
Do. seconds ....do.	3	5	0			
Do. Dantzig seconds ....do.	3	0	0			
Swedish timber ....do.	2	10	0			
Quebec oak ....per foot		2	8			
Do. elm ....do.		2	3			
Memel logs ....do.		6	0			
Quebec birch..........................do.		1	10			
St. John's birch ....do.		1	8			
Onega red deals ....per Petg. std.	15	0	0			
Petersburg do. ....do.	14	0	0			
Do. white ....do.	10	15	0			
Wyburg red ....do.	9	15	0	to	11	0
Memel 2nd red..........................do.	10	0	0			
Riga crown white ....do.	9	0	0			
Quebec 1st pine ....do.	19	10	0			
Holmsund mixed red ....do.	11	0	0			
Do. 2nd red ....do.	10	0	0			
Do. spruce..........................do.	7	10	0			
Do. Uleaborg..........................do.	23	0	0			
Memel crown staves ....per 120	8	10	0			
Pitch pine ....per Petg. std.	13	0	0	,,	13	10
Dram rea ....do.	7	0	0	,,	8	0
Gothenburg mixed red ....do.	10	10	0	,,	11	0
Do. 2nd red ....do.	9	10	0	,,	10	0
Wyburg red ....do.	10	15	0	,,	11	5
Bjorneborg red..........................do.	7	10	0	,,	8	0
Gefle mixed red ....do.	10	0	0	,,	12	5
Do. 3rd red..........................do.	9	10	0	,,	9	15

◆

LATEST PRICES OF MATERIALS USED IN CONSTRUCTION.

Timber.

Teak ....load	£13	0	13	10
Quebec, red pine	3	15	4	15
,, yellow pine..	4	0	4	15
St. John N.B. yellow	0	0	0	0
Quebec Oak, white..	6	0	6	10
,, birch........	3	15	5	0
,, elm	4	5	5	5
Dantzic oak	0	0	0	0
,, fir	3	5	4	10
Memel fir	3	10	4	10
Riga..............	3	10	4	10
Swedish	2	13	3	0
Masts, Quebec red pine	3	15	5	5
,, yellow pine..	3	15	5	5
Lathwood, Dantzic, fm	3	15	5	10
,, St. Petersburg	5	10	6	10
Deals, pr C., 12 ft. by 3 by 9 in.,				
Quebec, white spruce	13	0	18	10
St. John, white spruce	12	10	14	0
Yellow pine, per reduced C.				
Canada, 1st quality.	16	10	18	0
2nd do......	12	0	13	10
Archangel, yellow ..	11	10	13	0
St. Petersburg, yel...	11	10	13	0

Finland	£7	10	£8	10
Memel............	0	0	0	0
Gothenburg, yellow	9	0	11	0
,, white	8	0	9	0
Gefle, yellow........	10	5	12	10
Soderham	8	10	12	0
Christiania, per C., 12 ft. by 3 by 9 in. yellow	10	0	12	10
Flooring boards, per sq. of 1in., first yel	7	6	10	6
First white........	7	0	9	6
Second qualities	6	6	8	6
Pumice Stone pr ton	6	0	8	0
Oils, &c.				
Seal, pale....per tun	37	0	0	0
Sperm body	83	0	84	0
Cod	40	0	0	0
Whale, Sth. Sea, pale	36	10	37	0
Olive, Gallipoli......	49	0	0	0
Cocoanut, Cochin, ton	43	10	0	0
Palm, fine	38	10	39	0
Linseed	29	5	29	10
Rapeseed, Eng. pale..	43	10	44	0
Cottonseed..........	28	0	35	15

Metals.

Lead —

Pig, Foreign	per ton	£18	10	0	£18	15	0
,, English W.B.	do	20	5	0	20	15	0
,, Lead Co.	do	20	5	0	20	15	0
,, Other brands	do	19	5	0	19	10	0
Sheet Milled	do	20	10	0	21	0	0
Shot, Patent	do	22	0	0	23	0	0
Red or Minium	do	19	15	0	20	10	0
Litharge, W.B.	do	0	0	0	0	0	0
White Dry	do	30	0	0	0	0	0
,, ground in oil	do	0	0	0	0	0	0

Copper :—

British—Cake and Ingot	per ton	£70	0	0	71	0	0
Best Selected	do	71	0	0	72	0	0
Sheet	do	74	0	0	76	0	0
Bottoms	do	78	0	0	0	0	0
Australian	do	70	0	0	72	10	0
Spanish Cake	do	0	0	0	0	0	0

THE BUILDING NEWS.

LONDON, FRIDAY, SEPTEMBER 16, 1870.

ANNUAL EXHIBITION AT MANCHESTER.

THE Fiftieth Exhibition of Works of Modern Artists was opened last week in the galleries of the Royal Institution in Mosley-street, Manchester. Originally destined for the display of works of painting, sculpture, and architecture, the present year's exhibition too closely emulates that of the Royal Academy—the works exhibited consisting nearly entirely of paintings in oil and water colour: sculpture being represented by scarcely a score of contributions, chiefly in plaster; whilst architecture has even improved on the Royal Academy rôle, and does not even put in an appearance! There are, indeed, architectural subjects exhibited; but these are paintings of existing buildings: not, what might in former years have been seen on the walls of the Royal Institution, designs by metropolitan or local architects for edifices intended or imagined. The fact is greatly to be deplored. It has its cause, we fear, in the unhealthy rage for perspective representation, not only linear but aërial, that has afflicted our architects for the last thirty or forty years. They manage these things better in France; as any one may see by the public interest taken in the beautiful geometrical drawings of M. Lamiere, at South Kensington, and the public indifference which the pictorial paintings of our own architects (or their artists) meet with at the Royal Academy or the Architectural Exhibition. Surely there is a moral in all this, and an entirely new régime demanded, if we would educate the public in a noble art, being somehow elbowed out of our Fine Art galleries, both in London and in the provinces. People who have been just admiring the landscapes of Stanfield, Linnell, or Lee, don't care to gaze with interest on the "perspectives" of Mr. Pecksniff, bedight though they be with those wonderful foregrounds and figures, "put in" by the popular architectural colourist of the day. Moreover, the brush of the latter is too ubiquitous on the walls not to be tiresome. Let us leave the painters to themselves, study perspective, if we will, and apply it in our studies; but, in our appeals for public appreciation, rely more often upon sound geometrical drawing.

There are, we said, architectural pictures contributed to the Exhibition. We will proceed to notice them before giving any description of the other works exhibited.

No. 459, by A. MacCallum, is a large oil painting of the "Houses of Parliament from Lambeth," an excellent subject, very unsatisfactorily treated. The drawing is pretty faithful, if we except a very pardonable deviation of the painter's from the precise form of the actual finish of the Victoria Tower; but in one important particular the view is quite deceptive. Let any one conceive a prospect of the Houses, taken, as it would seem, from Lambeth Bridge; which, albeit it shows the Thames Embankment in course of construction, omits all representation of the new Westminster Bridge. As a piece of chiaroscuro the composition is a very unpleasant one; the river below and the sky above being streaked here and there with large blotches of yellow fog, for no very obvious purpose save that of caricaturing our London atmosphere. The picture, oddly enough, is hung side by side with No. 463, a portrait, somewhat affected in its attitude, of Dr. Barry, of King's College, the architect's son.

No. 307, "Caen," by W. W. Deane, is a very spirited and faithful painting in water-colour, bought up (and very cheaply too) on the first day's exhibition. The subject is S. Pierre, seen from the quay on the north side of the cathedral, looking towards San Sauveur's. The purchaser has borne off the best architectural picture in the exhibition, rich in intelligent delineation of some of the picturesque bits of old France, that are, alas, passing out of existence in these sad days of "civilization." On the same wall hang two other architectural pictures—No. 388, "The Town-hall, Cologne," by A. E. Everitt, and No. 369, "Wych-street, London," by Miss Louisa Rayner. We prefer, of the two, the lady's water-colour painting, putting in, however, a modest demurrer to a slight liberty taken with the steeple of S. Mary-le-Strand. Cologne Town-hall is depicted as seen after a snow-storm, with its Palladian details, crude and stiff, brought out into somewhat oppressive relief, so to speak. The painting is, in fact, too architectural to be pleasing. No. 206, "Abbeville," by R. E. Holding, is a very indifferent production. The turreted corner of a Continental street is obviously too ambitious a subject for the artist, with his present training in perspective. No. 275, "Temple Bar," by Miss Rayner, is a meritorious little work, very badly hung. No. 305, "Interior of the Church of Caudebec, on the Seine," by John Burbidge, struck us as one of the best works of its class—the picture well conceived, and the artist evidently at home with his subject. No. 341, "Interior of Ypres Cathedral," by Wyke Bayliss, exhibits, apart from its cloudy, opaque handling, a perversely-chosen subject—an aisle with lateral chapels filled with "pestilent Renaissance" fittings, in midst of which is (what we must presume the artist beheld as he painted the scene) a priest saying mass, with a big book in his hands! Opaqueness is by no means a common defect in the productions of our national artists. We have exhausted the list of them who have this year contributed architectural subjects to the Manchester Exhibition, if we except, as we must, some minor works of the kind, too bad to either hang or criticise. Foreign painters, however, contribute some pretentious architectural works, very inferior, as we think, to those of our own countrymen. In No. 524, "Ruins of a Villa at Rome," by A. Vertunni, we have, it is true, a magnificent exception; but in Nos. 424, "Interior of the Church of S. Jacques, Antwerp," T. Cleynheus, and 379, "The Choir of Santa Maria Novello, Florence," we have examples of the opaque handling just condemned. Both of these subjects—very tastelessly chosen by the way—are treated in a provokingly dull, literal, lifeless manner, which we should be sorry to see our own painters affect. There is no life, nor motion, nor air in such paintings. We hear of lawyers who will prove that black is white, and vice versâ, as the case may need; but with these Dutch and Belgian architectural painters, blacks, browns, greys, and greens, once committed to the canvas, know no alternations of light or shade, but assert themselves in the picture with monotonous intensity; the outlines are, moreover, crude and harsh, imparting a weird, repulsive aspect to the composition. Speaking of foreign contributors to this exhibition, we may add that great complaint is made that, while local artists have been made amenable to the rule of the council restricting exhibitors to two contributions, one foreign artist, Signor Vertunni, has been allowed to exhibit no fewer than five pictures. They are all of them large costly paintings, and, it must be confessed, very fine ones.

The principal sculptors who contribute are Mr. E. G. Papworth and Mr. J. Lawlor, the contributions of the former being all portrait busts, without interest of any kind as works of art; but many of Mr. Lawlor's works—such No. 547, "Head of a Nymph"; Nos. 546, "The Rose," and 546, "The Lily,"—are remarkable for their grace and delicacy of conception.

We have not much space left for a criticism of the paintings proper, writing as we have been with a special eye to the interest of architecture, too commonly ignored by the ordinary critics of the press. Some of the most striking of the paintings are, as is usual in provincial exhibitions, pictures already familiar to visitors of the Royal Academy. The grand work of Mr. E. J. Poynter, A.R.A., entitled "The Catapult," is one of these, and is deservedly admired. Of pictures of a high class, No. 1, "The Night before Bosworth," by T. Roberts, and No. 419, "Street Life in Rome," struck us as remarkable for their excellence. Of landscapes there is, as usual, a large collection, the most costly one in the whole collection being No. 175, "The Haunted Oak," by Mr. A. MacCallum, a picture singularly destitute of interest. Many of the smaller works of this class may be mentioned as meritorious, and, by the way, singularly modest in price:—No. 221, "A Brook, North Wales," by P. Deakin; No. 40, "Rhuddlan Castle," by J. Peel; No. 52, "Cottage at Shottery, Warwickshire," by S. H. Baker; 392, "Valley of the Dee near Llangollen," by the same artist; 445, "Minehead, Somersetshire," by A. Clint, are all admirably painted. Of portraits, we were best pleased with a large one by Mr. C. A. Duval, No. 81, contrasting in its dash and vigour most favourably with another, No. 485, Mr. Robert Barues, by the President of the Royal Academy. There is in this exhibition a remarkable dearth of potraits, very pleasing, as one may say, to behold. The mention of one Academy President reminds us of No. 65, "Spanish Boy: San Lucar in the Distance," by W. K. Keeling, the President of the Manchester Academy of Arts. This, if we err not, is one of the best paintings in the entire collection—a work of singular merit, bold and masterly in execution, and in conception full of pathos and beauty. It is a loan to the exhibition, and is well worth attentive examination. We would also allude very favourably to two works in the same room by a foreign artist, Nos. 26 and 33, by G. Müller. The subjects of each are somewhat alike, "The Impatient Baby," and "A Young Woman with her Nursling," both of them pictures of high merit, pictures engrossing the admiration of the visitors, and that by the sole power of good painting, unaided by any *ad captandum* resource, as is too common with paintings of the class. Of such clap-trap paintings there are many—too many—in the exhibition. We would single out as a specimen No. 426, "A Bone of Contention," by Mr. H. H. Couldery, by which may be seen how painting may decline into mere caricature, undeserving of all claim to the nobler title. There are, too, in this, as in every modern exhibition of late, examples of that affectation of exploded styles of art, sought to be in our own day revived by a certain school of English artists. Nearly all, if not all, the contributions of Mr. A. B. Donaldson belong to this class; and Nos. 5, "Margaret Mocked," and 395, "Afternoon in Treviso," are, as it seems to ourselves, very repulsive specimens of the school aspired to. In the former of these we have some most outlandish architectural details in the way of stone tracery; and in the latter a crowd of harlequins and columbines (to say nothing of a man in armour) lolling round a marble reservoir or fountain, and angling with rod, line, music and a landing-net for gold-fish, which are seen swimming, half exposed, on the surface of the water, crying (ready fried, let us hope) "Come, catch me: Come, catch me!" We cannot for the very life of us divine what purpose such paintings as these, executed in a woolly, feeble, effeminate style, or rather mannerism, are meant by their executants to serve, for either man or beast.

The exhibition has, on the whole, very many works of great merit. Several occur to us that, for want of further space, must go unmentioned. In the entrance hall may be seen, among some pictures very badly hung, and others very badly painted, a fine sunset picture by Mr. A. Clint. It is No. 531, "S. Catherine's, Scilly Islands," a very masterly work indeed. Some purchases were, it seems, made on the day of opening; but at exceedingly low prices. Indeed, the prices asked for many meritorious works may be assumed as an indication of the low ebb into which art patronage is naturally enough falling in these turbulent, eventful times.

◆

SUNDRY WORKS IN THE ISLE OF THANET.

(Continued from page 182.)

THE old parish church of Margate, dedicated to S. John the Baptist, is a spacious and interesting structure, although externally not very remarkable. Like S. Peter's, and indeed most of the churches in the Isle of Thanet, it retains a large proportion of Norman work of excellent character. It is long and low, as is often found to be the case with the churches built near the coast, possibly to avoid the winds, which in winter sweep over them with violence. The unclerestoried nave and chancel are continuous, without any intervening chancel arch or other structural division. The nave has side aisles, and is divided from them by an arcade of six arches on the north and seven on the south side; the westernmost columns and the easternmost ones are semicircular, with cushioned capitals, while somewhat curiously, as showing a very early modification, the two intermediate ones are octagonal, with well-moulded Early English capitals; the arches in all cases are very simple, of one order, with edges bevelled. The nave alone has a poor ordinary barrel-shaped ceiling, without ribs or ties; all the aisles and the chancel have the principals showing beneath their barrelled ceilings, with kingposts treated as columns, with moulded caps and bases, and four braces springing from above them. This gives a pleasing and striking effect to the long and low interior vistas. The church is unfortunately encumbered with high modern pews and galleries, and looks miserably cared for. The ancient windows have been all mutilated, and are without interest. The tower, a poor one, mauled out of all its original form, if not rebuilt, is at the north-west angle. A lead covering gives dignity to the side aisles, but the nave and chancel are only tiled. There are several interesting monuments and brasses preserved within the church. In the immediate vicinity of this church are many decaying examples and remnants of the characteristic ornamentally-gabled cottages of the locality.

Salmston Grange, just outside the town, has incorporated with its farm buildings some very interesting and picturesque ruins of an old monastery which belonged to S. Augustine's Abbey, at Canterbury. The chapel and infirmary exist in a very dilapidated condition, with the windows built up. The chapel has two-light reticulated traceried windows, one in the east end, and two in each side wall; the other building nearly parallel with it has windows of a geometrical traceried character. The two are connected by a third and lower building, and remains of some very good domestic details are to be found in other parts of this group of buildings. Shottendean, a village beyond Salmston, contains a few picturesque old brick cottages.

At Westgate, between Margate and Birchington, our steps were arrested by some works of a far more recent character. An estate of considerable extent has been laid out here for building, under the direction of Mr. C. N. Beazley as architect, and consequently a far better character is observable in the few houses already built than is usual among the speculative erections of the district; brickwork is honestly used, and not covered over with cement, and the forms of many of the villas are pleasing; we could have wished to have seen still more evidence of care and delicacy of detail, and would call attention to the very great difference of effect observable in the somewhat top-heavy chimneys and other parts (which are in these buildings constructed with sailing-courses of the usual modern sized bricks) and those of the ancient specimens scattered through the island, which are as delicate again.

We were more struck with another rather large groups of buildings just erected near them by Mr. John Taylor, architect, who is well-known as the clever and scientific inventor of special materials for almost every portion of a dwelling, and whose roofing tiles render this group of houses conspicuous from a distance. It is a pleasure to see such an effort as this to rescue this class of building from the commonplace character invariably given to them by speculating builders, who seem to have no higher thought than how to make the most out of every foot of frontage, and carry up their flimsy houses to the same regulation heights and to the same dreadful regulation patterns in town and country. Mr. Taylor's attention has rather been given to the development of the value of his land by the acre, and has given bungalows, as it were, in which real comfort has been combined with pleasing rusticity. The site has nothing between it and the sea, and nothing but sea between it and the North Pole, and must be as bracing a spot as our island could supply. By the use of his patent building blocks and tiles the first bungalow Mr. Taylor built was begun on the 14th August last year, was completely furnished and dry within two months, and inhabited on the 14th October. Since this he built another, which was purchased by Mr. Erasmus Wilson, and four others afterwards, which have been sold as soon as built. A description of the accommodation of one of them will, we think, be useful as well as interesting, thus. There are eight rooms all on one floor. The two side rooms of the front elevations have doors into the garden, and are for dressing after bathing. There is a serving flap or buttery hatch from the kitchen in the dining-room, to economise labour of service, a matter of importance in such an establishment, and indeed the whole arrangement is such as to require the least amount of household work. There is a double-bedded room in the attic. A verandah at front and back gives coolness in summer. The roof has deep rafters, ceiled beneath and covered above with felt and patent tiles, producing a perfectly cool roof. The basement is sunk into the chalk, and contains a larder, wine, beer, coal, and general cellars. Not only the building itself, but the whole of the furniture and fittings have been designed and arranged by the architect in a thoroughly simple and practical, while pleasing and appropriate manner. The entire selling price of this furnished freehold marine residence, with its garden complete, was, we were told, only £1,000, and all we can say is that we could not help envying the lucky purchaser.

Birchington, a picturesque village, boasts a well-restored and interesting old church of considerable size and importance. Its outline is peculiar, as it consists of a nave and aisles under one continuous roof, and chancel and side aisles, each with a separate compass roof and tower, with shingle-covered wooden spire over the westernmost bay of the south chancel aisle. Here, again, clerestories are conspicuous by their absence. The nave is wide and its aisles very narrow; the arcades of five arches upon octagonal columns are finely proportioned ones of Early Decorated work. The north chancel aisle is the Quex chapel, belonging to the manor of that name in the parish. It contains a fine altar-tomb, and the church has also several good brasses, and an ancient octagonal font supported upon one massive central and three slender outer columns. The east windows of the chancel and its aisles are good geometrical traceried ones, apparently, however, due to the period of the restoration, which has been recently effected under Mr. Beazley as architect. As far as one can judge now, it would appear to have been carefully done, and the new woodwork of the stalls in the chancel is of good and characteristic design; the open roof, however, of the nave seemed somewhat clumsy, and we regretted to learn that some ancient seats in the nave had been destroyed. A few old cottages may also be found in and near Birchington.

S. Nicholas Church, called also S. Nicholas-at-Wade, is a really noble structure, and one that has escaped any damage yet at the hands of restorers. It was anciently a chapelry to Reculver, but became a parish about the year 1300. It is built of flint and chalk, with stone dressings, and consists of a wide and spacious nave and chancel, with side aisles to each, the former of five arches, and a stately tower at the south-west angle. The arcade dividing the south aisle from the nave is of unusual interest. It is of transitional Norman; the easternmost arches are semicircular, upon circular columns, with richly carved capitals and varied archivolts, one of which is quite unique, with small decorative arcuated foliations with the points resting upon the larger bead which forms the edge of the archivolt and other mouldings, passing, as it were, behind the foliations, with a couple of dogtooth enrichments cropping up through them; towards the crown of the arch these foliations are crowded and narrowed in a most irregular manner. The western portion of the church is a subsequent extension of the period of the Flowing Decorated style, and has some very good windows of that class, as also have the chancel and its aisle—the east window in particular. The clerestory and roofs generally are of still later date—Perpendicular. The chancel only has its high roof; the rest are all depressed in pitch and have battlemented parapets. A few brasses are to be found in the interior, and in the vicinity of the church two or three old gabled cottages of a late date, of which, though the detail is coarse, the forms are picturesque, and they assist the fine church in making a very pleasing group, the more to be appreciated from the somewhat bleak and barren nature of the downs in this part of the island of Thanet.

Monkton, with a very plain square tower, is a prominent object in the landscape in the neighbourhood of S. Nicholas, but the structure is of very inferior interest. Although the Norman work of the same excellent type we have noticed in most of the principal churches in the island is to be found inside, the exterior is mainly of Perpendicular, of but moderate excellence, and the form of the church is very simple—a nave, chancel, and western tower; a walled-up arcade, however, on the north side shows that it once had a north aisle.

◆

UNDERNEATH THE VICTORIA EMBANKMENT.

AT least "full fathom five" beneath the road-level of the magnificent thoroughfare which extends from the Palace of S. Stephen's to the new bridge at Blackfriars lie the real foundations of all the various works of construction situated in, upon, and below that great engineering undertaking. Nor, in many instances, is the hard ground, the only reliable substratum, reached at that depth. Before proceeding to the immediate subject of our article, it is worth while to briefly touch upon the principal features of that which may in every sense be regarded in the light of a national enterprise. First of all there is the riparian barrier rearing its granite front in defiance of all the efforts of old Father Thames to regain the territory over which he held undisputed sway for so many centuries. In close proximity on the inland side, parallel to the line of the wall, runs a sewer constituting one of the main branches of the arterial drainage of the metropolis. Farther in still—in nautical language, hugging the shore still closer—is the Metropolitan District Railway, which is ultimately destined to form the direct link of steam communication between the west and east of London. Along its course rise up the wretched little stations, which are a disgrace to the site, and at intervals the principal thoroughfare is connected with the streets leading to the Strand. Boundary walls mark the line of demarkation between public and private property, and an attempt—we cannot call it a very successful one—has been made to impart something of a boulevard appearance to the promenade by the planting of a number of young trees which can scarcely be said to be in a very flourishing condition. Unless where there is a considerable area of ground devoted to the purpose, the air of London is not favourable to the growth of trees or plants of any description.

Returning to the subject of our article, it has been rumoured that the works underneath the Embankment are of such a nature as to prevent those above it being properly completed. It has been stated on good authority that a steam roller cannot be used for the purpose of levelling and consolidating the roadway on account of the particular manner in which the railway below is covered in. In other words, the roof of the railway is not strong enough to bear the weight of a steam roller over it. Is this allegation correct or is it not? Were we to judge alone from the actual facts of the case it might appear that it was, since a steam roller has not been employed in the preparation of the surface of the roadway. It has been levelled by an ordinary roller drawn by horse-power, although on the other side of the river, in South Lambeth, a steam roller has lately been employed in the repair of several main thoroughfares and smaller streets. It is gratifying to witness that at last local authorities appear to be progressing with the age, and to recognise that it is neither a humane nor economical measure to macadamise their roads by the feet of horses and the wheels of public and private vehicles. The heaviest steam roller weighs, in working order, about ten tons, which is certainly rather a greater load than that which generally traverses an ordinary thoroughfare. At the same time, there is not a railway bridge of any description passing under a public road which would not support such a load with perfect impunity. It is true that, some years ago, a lorry carrying the screw shaft of one of our large iron-plated men-of-war was refused permission to cross Westminster Bridge, and had to reach the other side of the river *via* Waterloo, but this refusal was not based upon valid grounds, being simply an excess of caution on the part of the bridge authorities. There is no question but that the lorry and its load could have been carried by the structure with perfect safety to its stability. As it was, the incident gave rise to some professional strictures on the design which were totally undeserved. An analysis of the construction of the bridge and its proportions proved the fallacy of the assumption of any want of inherent strength in it to safely support the load in question. Let us now follow this course and examine the principle of construction adopted for covering in the Metropolitan District Railway in that part of its route which lies underneath the surface or road-level of the Victoria Embankment.

The method employed is one of the simplest, cheapest, and strongest that can be used for roofing-in an excavation in which the contiguous land is retained by side walls and the headway is of a limited nature. It consists of throwing cast-iron girders across the line from side wall to side wall, turning brick arches between the girders, upon the lower flanges of which they abut, and flushing all up with concrete and a layer of asphalte to make the job water-tight. Omitting all consideration of the "top dressing," as it may be termed, it is obvious that we have, constructively speaking, three elements which compose when united the real strength and resistance of the principle adopted. They are respectively the girders, the "jack arches," as the small brick arches are technically called, and the side walls. The failure of any of these would unquestionably jeopardise the security of the whole. If we commence with the cast-iron girders, there is not the slightest doubt but that they are capable of bearing a far heavier load than ten tons upon their centre. This would only amount to twenty tons uniformly distributed over their entire length, which is comparatively an insignificant load. In fact, the proportion of the depth of the girders to their span, and the corresponding breadth that must of necessity be given to the bottom flange, together with the thickness of metal required by the exigencies of manufacture, would render any calculation for supporting a central load of ten or a uniformly distributed load of twenty tons almost a superfluous operation. Certainly girders of cast-iron will sometimes yield under circumstances that it is not easy to account for, and in connection with those spanning the Metropolitan District Railway the failure of one in King's College is singularly approximate. We trust it is not typical of the fate that is to befall its new neighbours. *Absit omen.* Still, a material so brittle and treacherous in its nature as cast-iron is liable to fracture under loads of an impactive character, the absolute weight of which is far below that which would, in a static sense, determine its failure. So that although the dead weight of the largest steam roller is but ten tons, yet if that weight were brought upon the girders with any initial velocity, or force of impact, its power to produce strain upon them cannot be regarded as equivalent to the effect produced by a mere dead load of ten tons. But in the question under consideration is this so? Is this weight of ten tons merely a dead weight, or is its straining effect upon the girders increased by the motion of the roller or any other circircumstance attendant upon the rolling operation? Those who have watched a steam roller at work are well aware that the motion is too slow to cause any practical difference between its total weight being considered as a dead weight or a moving or live one. The force of impact generated by the passage of the load is virtually nothing. Having determined this point, the next to be taken into account is whether the action of the machinery produces any great vibration or oscillation of of the roller, but the truth is that the weight of the roller and the machine bear so large a proportion to that of the motive parts that the slight vibration always inseparable from the working of steam engines of any description is completely absorbed in the inertia of the mass. It may be therefore admitted with perfect certainty that the cast-iron girders are quite strong enough to bear any kind of strain that may be produced upon them by the heaviest steam roller that can be caused to travel over them. This, of course, presumes that the iron is of good quality and equal in compressive and tensile strength to that always employed in *bona fide* engineering works.

Having disposed of the girders, the "jack arches" have next to be considered, and here as well as in the side walls we have to deal with an uncertain element in the calculation—namely, the brickwork. However sound and good the bricks may be, if bad mortar be used it is impossible to make reliable and permanent work. The strength of brickwork lies altogether in the firm cohesion of all its component parts, and when it is borne in mind what a very small proportion each of these bears to the whole mass of a heavy retaining wall, it is clear that its stability depends upon the mortar or cement, and not the bricks. Obviously, if the side walls supporting a system of girders are incapable of doing the duty assigned to them either through bad designing or faulty and defective workmanship, any surplus of strength in the girders themselves is not of the slightest use whatever. It is a constructive maxim that "no combination of parts is stronger than its weakest component," and the violation of this truth is, we regret to say, a very common occurrence among engineers and architects. The span of the "jack arches" referred to is so very insignificant that it is extremely improbable that they would yield to anything much under the crushing strain of the material, provided the work is of good quality. With respect to the side walls the question assumes a different phase, for we have to take into consideration the character of their foundations. There are no doubt some "soft spots" here and there along the course of the line, as may be reasonably anticipated from its riparian character. If we imagine one of the side walls to sink but a mere trifle, the immediate result is to cause the girders to cant on to that end and bring an undue pressure upon it. The passage of a ten-ton steam roller just at this juncture over the yielding support might cause serious consequences. In connection with this portion of our subject it cannot be forgotten that an arch of brickwork constituting part of the works of the Metropolitan District Railway near new Blackfriars Bridge literally "came down by the run," and was attended with fatal results. We again say *Absit omen.* The alleged cause of the catastrophe was the premature striking of the centres, together with the sudden tipping upon the arch of a lot of bricks. It is very difficult to arrive at the true cause of such accidents as these. From the whole of the statements and arguments before us there are two conclusions to be arrived at. The one is that there is not the slightest fear about the absolute strength of the cast-iron girders not being sufficient to bear the contemplated load of ten tons passing over them at any velocity. The other is, that if the *tout ensemble* of girders, arches, and side walls cannot safely carry this comparatively trifling additional load, there must be something very rotten in the whole concern.

HOW SHALL SEWAGE BE TREATED?

If the A B C process can survive the report of the Royal Commission on the Pollution of Rivers which has just been made concerning it, it will indeed be a wonderful process, and its managers wonderfully clever in extricating themselves from an awkward position. The Commission have just reported to Parliament that they have made a further investigation of the merits of this system, which has been so much talked of, and so highly praised by its promoters, and so doubtfully accepted by the public as being what it has been alleged to be, and the result of that investigation is as follows:—

The Commission first turned their attention to the process of trying its effect during three days in 1868—viz., July 30 and 31, and August 1—upon the Leicester sewage. The Leicester Corporation have elaborate tanks and machinery for the lime process, and these were given up for the purpose of trying the A B C process in comparison with it.

To begin with, the Commissioners think it useful to state (1) that the strength of sewage, as regards dissolved constituents, is ascertained by two analytical determinations —viz., "total solid matters in solution left on evaporation," and "total combined nitrogen,"—and judged of by this standard the Leicester sewage is below the average strength. The total solid matters in solution left on evaporating 100,000lb., of sewage were, on May 13, 107½lb. July 30, 111lb., July 31, 112lb. and on August 1, 108lb.; and the total combined nitrogen dissolved in 100,000lb. of sewage was, on these days, 2·524lb., 2·102lb., 2·229lb., and 1·956lb. respectively; and that (2) the purification of sewage may be conveniently considered under two heads—1st, clarification, or the removal of suspended matters, so as to make the resulting liquid more or less clear and transparent; and 2ndly, removal of matters in solution. The suspended matters contained in sewage are well known to undergo rapid putrefaction, and to become very offensive, consequently their removal, either by filtration or chemical treatment, is, in itself, an important amelioration of sewage. But the liquid so clarified contains in solution much nitrogenous organic matter, which, in warm weather, becomes putrid, even when mixed with a considerable volume of river-water.

Of the soluble constituents of sewage the most important are the total solid matters in solution left on evaporation, organic carbon, and organic nitrogen, and the analyses of the Leicester sewage after treatment by the A B C process show that the total solid matters in solution were markedly augmented. The process had the effect of diminishing the organic carbon. The material, however, which it is of the greatest importance to remove from the dissolved constituents of sewage is nitrogenous organic matter, because it is chiefly this kind of organic matter which enters rapidly into putrefaction and becomes an active agent in the pollution of rivers. It is precisely here that the process signally fails in accomplishing such an amount of purification as would render sewage admissible into an open watercourse. During two days' experiments the organic nitrogen removed was 58·86 per cent. on the first day, and 50·07 per cent. on the second; so that it may be stated in round numbers that, as regards putrescible organic matter, the application of the process at Leicester during the visit of the Commission would render it possible to double the amount of purified sewage discharged into the river without increasing its pollution. Although this is by no means an unimportant result, yet it falls far short of what is required to restore our sewage-polluted rivers to a satisfactory degree of purity.

An inspection of the analytical table shows that the effluent sewage, after treatment, invariably contained more ammonia than the raw sewage. Thus, on the first day, 100,000lb. of sewage contained 1·65lb. of ammonia before treatment, and 2lb. after treatment; on the second day, 1·8lb. before, and 2·5lb. after; and on the third day, 2·25lb. before, and 2·5lb. after the treatment. The origin of this additional ammonia is not difficult to understand: alum is used in the process, and as nearly all alum now manufactured is ammonia alum, containing 3·7 per cent. of ammonia, it is probable that this is the chief, if not the only source, of the additional quantity of ammonia. The action of the chemical re-agents upon the nitrogenous organic matter contained in the raw sewage is also possibly another source of the increased quantity of ammonia. Such an addition to the amount of dissolved ammonia has little significance, as regards the pollution of rivers, but it has an important bearing upon the applicability of the process to the economical production of a solid manure, because it indicates that the ammonia in solution in the raw sewage—the most valuable manure constituent—is not precipitated. Indeed, the total combined nitrogen, which represents very nearly the manure value, was actually greater in the effluent liquid than in the raw sewage; and, as regards dissolved constituents, the effluent liquid was a more valuable manure than the raw sewage. This fact is very significant, as bearing upon the manufacture of manure by the A B C process, when it is considered that seven-eighths of the manure value of sewage resides in the soluble constituents.

Notwithstanding the loss of ammonia in this process of sewage defecation, the method of treatment still yields a solid manure of greater value than that obtained by the lime process; a circumstance which is explained, to a great extent, by the mud from the A B C process being acid, whilst the lime mud is alkaline, so that in drying the latter loses ammonia, whilst the former does not.

The value of the solid manure obtained by treating the Leicester sewage with lime has been estimated at from 15s. 5d. to 17s. by chemical analyses; but experience has warned the manufacturer of these feeble manures that the value indicated by chemical analysis cannot be counted upon in the market. Thus the Leicester mud is actually sold for 1s. per ton. Indeed, without fortification with sulphate of ammonia, nitrate of soda, or superphosphate of lime, such manures are scarcely saleable.

Leamington, however, is the place where the A B C system has been longest tried. Its patentees undertook to apply it to the Leamington sewage in March, 1869, and the Commission visited the works on the 11th of December. The operations were carried on by making the following mixture :—

	Cwt.	qrs.	lb.
Alum	1	2	0
Sulphate of alumina	0	3	7
Clay	8	0	0
Animal charcoal	0	2	0
Clay and blood (5½ pts. of blood)	0	1	12
A mixture of potash, carbonate of potash, and carbonate of soda	0	0	6
Previously manufactured manure	0	0	14
Strong solution of perchloride of iron	1 pint.		

This mixture was put into a large cauldron, where it was thoroughly incorporated with river water, and delivered in a regular supply into an adjoining tank, in which it was mixed and violently agitated with raw sewage. From this vessel the sewage flowed into a series of subsidence tanks, where a large proportion of the suspended matter was deposited; thence the defecated sewage flowed into other tanks, and from these into the river.

There was an admixture of river water with the effluent sewage, caused by leakage of a part of the works, to the extent of one-fourth of the quantity, and, applying this correction, and assuming the composition of the river water to be at that time what they afterwards found it to be, the Commissioners got the following nett effect of the A B C process on that occasion :—

1st, on the total solid matters left on evaporation; 2nd, on the elements of organic matter—organic carbon and organic nitrogen; 3rd, on the total combined nitrogen; and 4th, on the organic matters in suspension.

Before treatment the raw sewage contained in 100,000lb. 83·50lb. of the first, and after treatment 99·2lb. Of the second 4·355lb. of organic carbon before and 3·379lb. after, and of organic nitrogen 2,890lb. before and 1·652lb. after. Of the third 7·807lb. before, and 6·392 after, and of the fourth 56·28lb. before, and 5·15 after treatment.

These results show that the sewage operated upon at Leamington was much stronger than that at Leicester, and a comparison of the effects upon the sewage at the two places shows that at Leicester 30·3 parts of organic carbon were removed by the process, and at Leamington 22·4, while the proportion of organic nitrogen removed was 54·47 at Leicester, and 42·84 at Leamington. After this comparison it is seen that as the affluent liquid at Leicester was not admissible into running water, the liquid flowing from the works at Leamington was much less so.

Considering it desirable to test the process again, the Commission paid a second visit to Leamington on the 10th of May, 1870, without giving previous notice of their intention. They found the yards around the buildings covered with sewage mud, which had been spread out to dry. The smell was extremely offensive, and the process, as it was then being carried out, would be pronounced a nuisance whenever conducted in or near a town

Commencing at 11 a.m. on the 10th of May, the Commissioners took a sample of raw sewage above the works. At the same time a mixing tank commenced to discharge the A B C liquid into the sewage. This tank contained—

	cwt.	qr.	lb.
Ammonia alum	3	0	0
Clay (moist)	6	0	0
Animal charcoal	0	0	15
Vegetable charcoal	0	0	20
Epsom salts	0	0	20
Blood, in a pailful of clay magma	0	0	4
River water about 1,100 gallons.			

Experiments with this mixture continued from early morning, half-hour samples being taken, until 1 o'clock p.m., when, the sewage coming down in larger volume, more alum was added to the mixture. Down to about 1 o'clock in the day the quantity of A B C mixture used was from 7·3lb. to 8lb. per 1,000 gallons of sewage, and in the afternoon, from 1 to 7 o'clock, 4½lb. of mixture per 1,000 gallons of sewage.

After tabulating the analyses the Commission consider the process as a manure-producing operation, because if it be true that a valuable manure can be thus extracted from sewage, it might be advantageous to prefix this method of treatment to some other method capable of purifying the effluent liquid, but the chemical analysis of the precipitated mud does not afford any encouragement to such an enterprise. This mud contained the following ingredients :—

Organic matter, containing 18·5 parts of carbon and 1·55 parts of nitrogen	34·27
Ammonia	·16
Phosphoric acid	1·98
Clay, and other useless mineral substances	56·13
Water	7·46
	100·00

Total nitrogen calculated as ammonia 2·05 per cent.

Notwithstanding the small proportion of fertilising matter which the analyses prove it to contain, the manure is said to have commanded a ready sale at £3 10s. per ton; but the Commission consider the evidence hitherto obtained of its agricultural value to be of the weakest kind, because the produce of autumn-sown crops, to which alone it could have been applied in 1869, depends more on the weather than on the composition of any manure applied to them; and as to the year 1870 the weather has hitherto been such that spring top-dressings of even the strongest artificial manures have been useless. The whole testimony is thus necessarily that of mere garden beds and flower pots, and is entirely insufficient to justify an agricultural opinion.

The conclusions arrived at are that—

"1. The process removes a large proportion of the suspended impurities from sewage, but on no occasion, when we have seen it in operation, has this removal been so complete as to render the effluent sewage admissible into running water.

"2. The A B C process removes a very small proportion of the soluble polluting matters from sewage. After treatment by this process the effluent sewage is very little better than that which is obtained by allowing raw sewage to settle in subsidence tanks.

"3. The manure obtained by this process has a very low market value, and cannot repay the cost of manufacture.

"4. The manipulations required for the extraction and drying of this manure are attended with a nauseous odour, especially in warm weather, and would occasion a serious nuisance if the works were situated in or near a town."

"Irrigation is the only process of cleansing sewage which has stood the test of experience, and unless it be extensively adopted there is but little hope of any substantial improvement in our sewage-polluted rivers."

TOWN CHURCHES.*

By Pearson Hayward, Esq., Architect.

I TRUST the Members of this Society, which I have now the honour of addressing for the first time, will bear with me if the few remarks contained in the following paper appear to them somewhat crude and incomplete. They are advanced simply in the hope of eliciting the opinions and comments of men far better qualified than myself to deal with a subject of great interest and importance to all who have a love for church architecture, and many of whom are doubtless familiar with the practical needs and working of churches in our large towns in this nineteenth century.

Our own country possesses few, if any, churches (excepting, of course, our cathedrals) on anything like the same scale, both in point of size and magnificence, as those found in most of the large cities on the continent; for the abbey churches, in which, up to the period of the Reformation, we were so rich, and which rivalled our cathedrals in magnificence, at the present time, with very few exceptions, have little but their ruins left to testify to their former greatness.

This general absence of large churches is, I think, to be accounted for in the fact that in early times we had comparatively few centres of commercial activity and enterprise to bring men together. The population was almost entirely agricultural, or else dependent on the sea for its support, and was scattered over the surface of the land in country villages, and in the fishing hamlets that fringe our coasts; for it is only within a very few years, comparatively speaking, that the marvellous increase of manufacturing industry in the North has led to the rapid growth of places which formerly were almost unknown into huge overgrown towns, with a swarming and yearly increasing population. Another reason may be, that for centuries our land has been spared the horrors of foreign invasion, which compelled the rural population of less favoured countries to crowd into the fortified cities for protection.

This influx of people into the towns on the Continent required the erection of large churches for their accommodation; and this necessity was still further increased in many towns which possessed relics of peculiar sanctity, by reason of the vast swarm of devotees which flocked at stated times to the shrines.

Mr. Street, in his book on "Spanish Architecture," has introduced us to churches magnificent indeed in scale, and of a type that in many respects is very suggestive as regards the subject of this paper.

At Gerona the nave is 73ft. broad and 160ft. long, and is capable of containing 2,300 people; and at Barcelona the Church of Santa Maria del Mar is even grander, having a nave and aisles 180ft. by 90ft., the columns being not less than 45ft. apart, and consequently offering little or no obstruction to sight or sound.

S. Jean Perpignan is another grand church, having a nave, without aisles, 170ft. in length, by 60ft. in width.

These churches, and others, such as those at Padua and Verona, offer a vast and nearly unbroken space to the great body of worshippers, enabling almost all present to see and take part in the services performed in the choir and at the high altar; differing greatly in this respect from our usual English type of church, where the columns, which at frequent intervals divide the nave from the aisles, offer serious obstruction to both sight and sound.

Another form, also very unusual in this country, is that in which the great body of the church is square, polygonal, or circular on plan, as in the Church of Notre Dame at Trêves, and that in which the dome is generally employed as a means of roofing, as in the churches of the district of Auvergne, in the South of France.

The only ancient instances I know of the circular form having been adopted in England are those of the Temple Church in London, and the round churches of Cambridge and Northampton. There may, perhaps, be others of which I have not heard. I remember, however, seeing in the Building News, some time ago, a design of Mr. Truefitt's for a new church, which had a circular nave. Whether this form was adopted in consequence of the exigencies of the site, or whether it was a deliberate attempt on the part of the architect to strike out a new path, I do not remember, or whether the design has been carried into execution, but at all events the experiment would be a very interesting one, and I doubt not would prove a success, provided the choir or chancel could be so planned that a full view of the altar should be generally obtained. A church of such or similar plan might be roofed either with a dome, which I would gladly see introduced into this country, or by an octagonal lantern, of which that at Ely Cathedral is a most beautiful example. Few people who know anything of London can fail to have been struck with the grandeur of the dome of S. Paul's Cathedral, as seen from almost every point of view. I use the term *grandeur* deliberately, for no cathedral tower or spire that I have ever seen has produced on my mind the same effect of simple dignity as it towers aloft above the busy whirl of London life. And if this be one of the results of Classic architecture, surely those who have at heart the development of "Christian" architecture, to use Mr. Pugin's term, cannot hesitate to engraft upon it this noble feature, which, although it is not altogether unknown to Gothic art, as the examples I have cited of the churches in the district of Auvergne sufficiently testify, has not, however, received that full expression of which it is capable, and is quite unknown to our English type of Gothic.

Either the wide rectangular form, or the circular or polygonal plan that I have referred to, seems to me better adapted to our town churches, and indeed to our new churches in general, in regard to their congregational use, than the stereotyped plan in general use,* in which columns and arches divide the space into nave and aisles. The disadvantages of the present form of church have long been felt more or less by architects, and hence the various expedients to which they have resorted to lessen the obstruction caused by the nave pillars, either by placing them further apart, or narrowing the aisles simply to the condition of passages, as Mr. Hawkins has done in the church of S. Michael and All Angels in this city, or else by reducing the columns to the greatest possible tenuity, and thereby destroying, in great measure, the very bone and sinew of good Gothic work. This last expedient has certainly been carried to the *reductio ad absurdam* in the case of most of our modern Nonconformist chapels.

I am well aware that the type of church which in this paper I specially wish to advocate (that of an unbroken rectangular nave of wide span) would be more costly in execution than that usually followed, and would afford little of that picturesque grouping and effect of light and shadow which we all admire so much; but it seems to me that the practical gain would more than compensate for this, and that, moreover, there would be a simple dignity about a well-proportioned unbroken interior suggestive of that singleness of worship which especially distinguishes our Anglican church from that of Rome.

As regards that ever-important question of cost, especially in these days, when, in most cases, every farthing must be accounted for, and when the church architect is usually forced (to make use of a homely proverb) to cut his coat according to the very small amount of cloth at his disposal, let us for once take our stand on higher ground, and ask whether it would not be better to build one really grand noble church than two or even three inferior ones; one common house of God for all classes and ranks of life, dedicated to His glory and honour with something of the same reverend spirit that animated the builders of old, who lavished with no niggard hand on His sanctuary all the richest treasures of their imagination, artistic power, and material wealth?

Permit me now to mention certain general principles which, it seems to me, architects who are called upon to design town churches should steadily keep in view.

I think the first and most important of these is *height.* The church, typical of the ark of safety, should float calmly above the troubled waste of houses below, though not shunning contact with them, as if, in her lofty majesty, she despised all association with what is poor and mean. I think there should be a great difference in this latter particular between town and country churches. The country church seems to crave comparative severance from the busy tide of human life; nor can the quiet country churchyard, where old friends and neighbours, aye and foes too, generation after generation, sleep beneath the spreading yews, easily be compared with the dreary waste of gravestones, lying or tumbling at all angles in different stages of decay, enclosed with high gaunt iron railings of odious design, half-eaten through with rust, which surrounds so many of our older city churches.

But to return to the question of height. In general the town churches in Normandy gain vastly in dignity and grandeur from the manner in which they soar above the mean and poverty-stricken hovels that so often surround them, and are built against their very walls in many instances.

This proximity to inferior buildings, I think, in the next place, is a strong argument for making all the lower portion of our town churches as simple and severe as possible, confining whatever external richness that there may be to the upper portion, and even then all exuberance of detail ought to be avoided, considering the destructive effects of town smoke, and we should trust for effect to simple dignity and purity of outline.

I was very much struck the first time I saw S. Alban's Church, Holborn, at the grand way in which it towered up above the surrounding buildings. Mr. Butterfield in this respect at least, and also in his great severity of treatment, seems to me to have caught the true spirit of what a town church should be. And the same may be said, in a greater or less degree, of the churches that have been built in London within the last few years, and notably of the Church of S. Peter, Vauxhall, of which Mr. Pearson is the architect. And there is another and practical advantage in this loftiness that cannot be over-estimated: I mean as regards light and air, for by keeping the windows lofty, and well up above the surrounding buildings, the better the light and more perfect the ventilation.

We must now consider the practical difficulty of roofing these large unbroken naves, of 50ft. or 60ft. span, which I have endeavoured to advocate as being better suited to congregational worship in our town churches than the usual conventional type. Groining, such as we have in our cathedrals, would undoubtedly be the most beautiful kind of roof we could have; but its employment would be almost out of the question, except in very exceptional cases, chiefly on account of the expense, but also on account of the great lateral thrust that groining would exert on the walls at any height above the ground.

And after all, to those who hold with Mr. Ruskin that truth should be regarded as one of the very foundation stones of all true architecture, the use of groining in this manner cannot be perfectly satisfactory; for is it not in reality a sham, seeming to casual observers to be *the roof*, whereas it requires a covering of a perfectly different form, and of an inferior material, to keep out the weather? Where groining is used as a beautiful ceiling, supporting the floor of a chamber above, as in the crypts of many of our cathedrals, and in our own county, in the case of many of our church porches, which have a chamber or parvise over them, its employment seems to me perfectly legitimate, but hardly so in the former case where it supports nothing except itself.

Putting groining, then, on one side, there are, I think three methods by which the roofing of this wide span might be effected. The first and most obvious of these is an open timber roof. This would be certainly the cheapest and most thoroughly English way of treating it, but a roof of that wide span, and of a pitch such as we are accustomed to see in our best churches, would be very difficult to construct without its exerting great thrust on the side walls: for unless they were very thick and strongly buttressed, their power of resistance to the lateral thrust at any considerable height from the ground could not be great, weakened moreover as they would be by lofty windows. Even in churches of small span a roof of steep pitch, unless it is very carefully constructed, exerts great pressure on the side walls, and where faulty construction of roof is joined to faulty construction in the walls, as in the recent case of Holy Trinity Church, Barnstaple, a collapse must sooner or later occur. A roof constructed on the tie-beam principle would of course obviate this, but to me there is a somewhat clumsy, inartistic look about a roof of this construction that is not very satisfactory.

---

* Read before the Exeter Diocesan Architectural Society, in 1868.

* I may here mention that since this paper was written a series of articles have been published in the Building News, written by Mr. Cubitt, entitled "Churches for Congregations," in which the author very ably exposes the folly of that strict adherence to the old conventional type of church by our modern church architects with very few exceptions, on the ground that an arrangement which was well suited to a ritual and service differing essentially from that of the Church of England ought to give place to one better adapted to the congregational character of our worship, for which the less obstruction there is to sight and sound the better. And he gives plans and illustrations of churches of different styles and countries, as affording valuable suggestions that might be turned to account in designing churches to suit the requirements of the age, without, however, in any degree sacrificing the ecclesiastical character and dignity of our Gothic architecture.

This brings me to the second method that might be adopted, viz.: an *iron* roof.

(*To be concluded next week.*)

NEW ELEMENTS OF HAND-RAILING.

(*Continued from page* 186.)

Plate 2.—Sections of Cylinders.—The Ordinate—its Use and Value.

A CYLINDER is properly considered to be a long circular body of uniform diameter, whose extremities form equal parallel circles. Such is the usual definition given to anything round or circular. This, no doubt, is understood. But the sections of a cylinder, when cut obliquely, have not been so satisfactorily explained.

If we were permitted to use comparisons, this problem could be briefly solved, and, at the same time, in a practical manner, so as to be understood by any one. For example, lay a round broom-handle in the mitre-box—now make one cut on the rake, and the result will be two sections perfectly oval in form.

To illustrate this still further: Let D, Fig. 1, be the base of a stove-pipe, and E C the pitch of a roof. It is now required to cut a hole in the roof so as to allow the stove-pipe to pass through it, the pipe standing perpendicular. It is quite clear that the hole must be oval and its long diameter be parallel with the pitch B C, for the reason that D shows the diameter P R, parallel with the base A B. These perpendiculars drawn from P and R to intersect B C, give the long diameter P R at T, and the short diameter or minor axis N H being equal to P R at D. This proves that if the stove-pipe was cut to the pitch of the roof, its section is truly represented by the oval T.

Let us apply this problem to hand-railing. Suppose L P at D be the thickness of the stove-pipe; by drawing perpendiculars from L P to intersect the pitch B C we have a guide to square over L P, which cuts the long diameter of the oval. This shows a correctly drawn mould which, being in position, will stand over the quarter circle at D; and the bevel, seen in the angle, being applied to the surface of the plank, gives the plumb cut for the joint L P.

Fig. 2.—In order that the young learner may have correct ideas of the constructive principles embodied in this work, we cannot do better than give a simple problem in carpentry, the solution of which may lead to correct conclusions as to how to proceed in the execution of works which involve principles that require more exact construction. For example: Let A C be the rail of a gate, or a brace; it is required to make a mortise through it to receive the square bar N, the corners of which are to stand at right angles with the edges of the rail. The process is clear and needs no explanation; for it is self-evident that R is the shape of the mortise on the surface of the stuff, and that the square bar N will pass through it. Such being the case, it follows that the two upper lines of R forming the obtuse angle may be considered as tangents to an elliptic curve; and the two sides of the square bar N tangents to a quarter circle, while the line A C represents the major axis, and the right angle from H the minor.

The next consideration is the bevel, which, in this case, and all others, must be obtained, and applied correctly. Let it be remembered that any two tangents of equal length, both standing on the same pitch, require but one bevel. Such being the case here, proceed to find it by taking any point on the line A C, say H. Square over to cut at T. Next, draw from K a parallel with H P. Now take H for centre, and for radius the circle touching the line from K, cutting at S. Join S T. Thus giving the required bevel. Now apply this bevel to the sides of mortise R. Let its stock rest on the surface of the stuff and at right angles with P H, as shown on the left. Then the blade and side of the mortise agree.

The same application is adopted for the joint on a wreath.

To ascertain the accuracy of this bevel, extend one side of R to cut the edge of stuff at L. Now let the stock of the bevel V rest on the surface and mark the edge by its blade. Then the line on the edge and the side of the mortise agree.

Or, let the bevel V and S stand in the position just named. Both will make plumb lines, and these blades be out of *wind*.

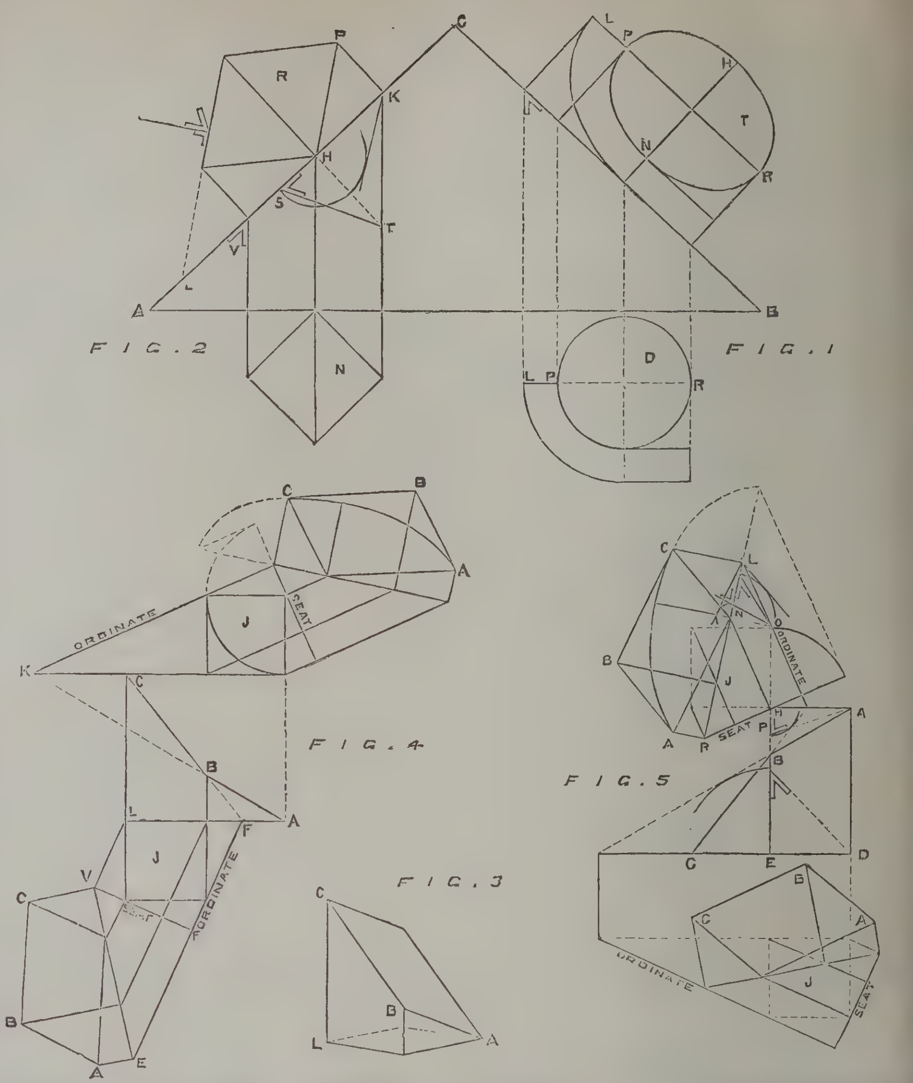
This problem and its application should be well understood, especially the method of finding the bevel; the same being adopted for all the practical drawings in this work.

The next important point is to understand the ordinate and its use. It is the ordinate alone that gives the correct tangents for the construction of a mould. To have a clear perception of this obviates all difficulties in hand-railing. There is no better way of illustrating it than by preparing a square block similar to that shown at Fig. 3. Mark on two of its sides two unequal pitches, say A B C. This gives L C as the height of both. We now must show on a flat surface the section of the block, or its shape when cut through.

Fig. 4 explains this. Let A, L be two sides of the block unfolded. L C the given height, and J its base. A B C the given pitches. Extend C B, cutting F. From F draw the ordinate cutting the corner of the square. Draw lines from the other three corners parallel with the ordinate. Make the seat square with it. Let F E equal L C. Join F V, and we have the pitch; this having intersected the lines parallel with the ordinate gives a direction to find the position of A B C. The measurements are taken from the seat. The figure truly represents the section of the block, for the reason that its sides agree with the pitches A B C unfolded.

The section may be produced with equal certainty by extending the short pitch A B to cut at K, from which draw the ordinate cutting the corners of square J. The construction shows a section corresponding in all particulars with that below.

Fig. 5 shows how to reduce the construction so as to take the least possible space on the drawing-board, and produce the same results as given at Fig. 4.



HAND-RAILING.—PLATE II.—SECTIONS OF CYLINDERS.—THE ORDINATE—ITS USE AND VALUE.

The squares J, J show the seat on the lower corners, and at right angles with the ordinate; C E D represent two sides of the block unfolded, and D A the height of both pitches, as C B A shows.

To prove the correctness of the sections the letters A B C must agree with corresponding letters on the pitches.

The next consideration is the bevels. Two methods are given, both producing the same result when the tangents on the ground plan make a right angle, as is the case here. Extend the pitch A B and C B. Then take H for centre, and for radius a circle touching C B extended, cutting at P. Join P A, and the angle thus made gives the required bevel for pitch B C.

Again: Take E for centre; and for radius a circle touching extended line A B, and cutting below B. Join B D, which gives bevel for pitch A B.

The second method is more practical, and can be successfully applied to every description of wreaths; no matter what angle their tangents make, nor what portion of a circle they are to stand over, the bevels are reliable for all and every position in hand-railing.

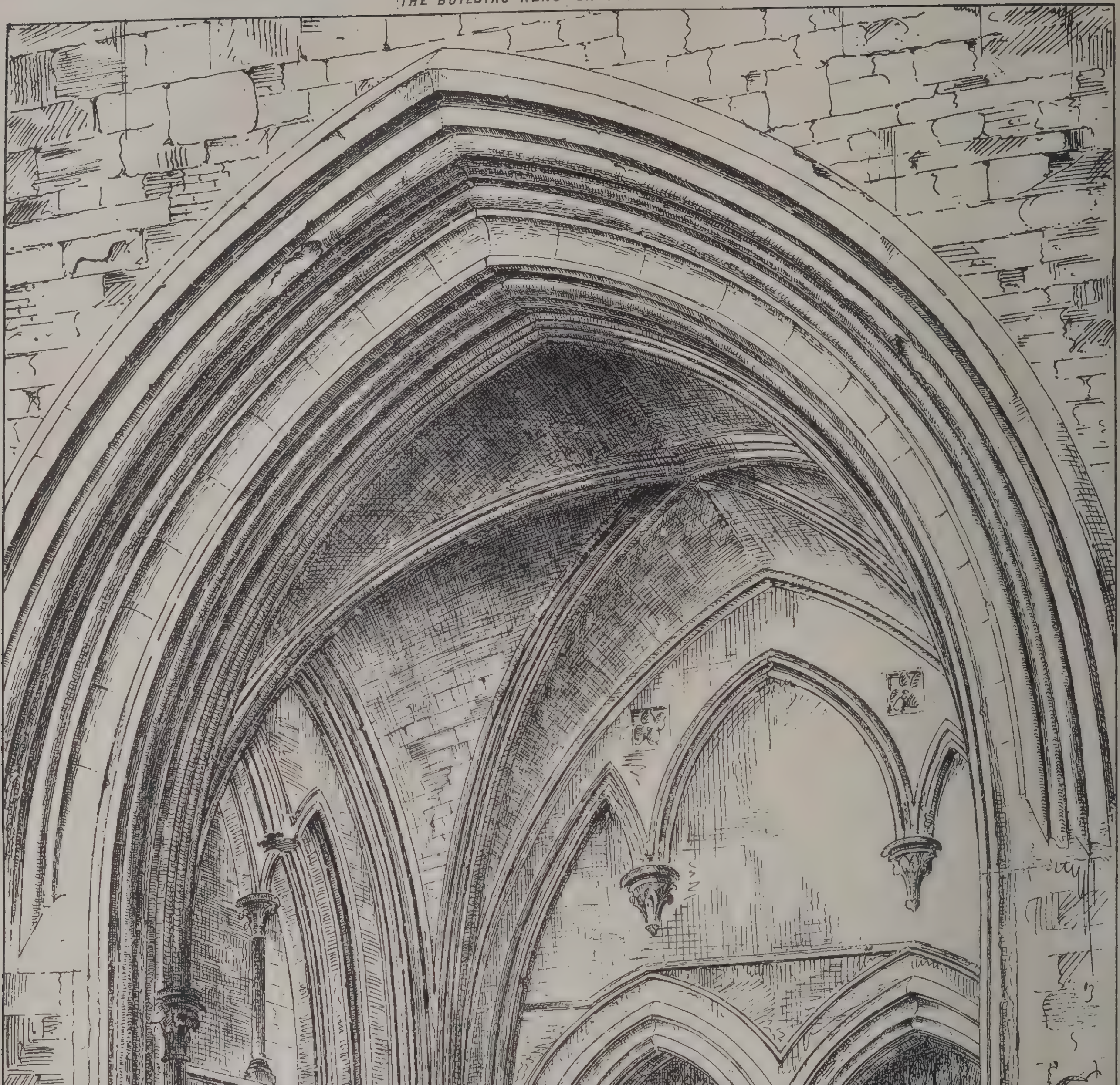
The Method.—Draw two lines from L that shall be parallel with the tangents C B and B E. Then take any point on the pitch L R, say N. Draw at right angles with L R, cutting the ordinate at O. Now take N for centre, and for radius a circle touching the line from L, that is parallel with A B and cutting at L. Join L O. The angle it makes contains the bevel for the pitch A B. Again, take N for centre, and for radius a circle touching the line parallel with C B, cutting at N. Join N O, and the bevel is obtained as shown. It is applied on the joint of pitch C B.

This method is adopted for every wreath contained in this work.

(*To be continued.*)

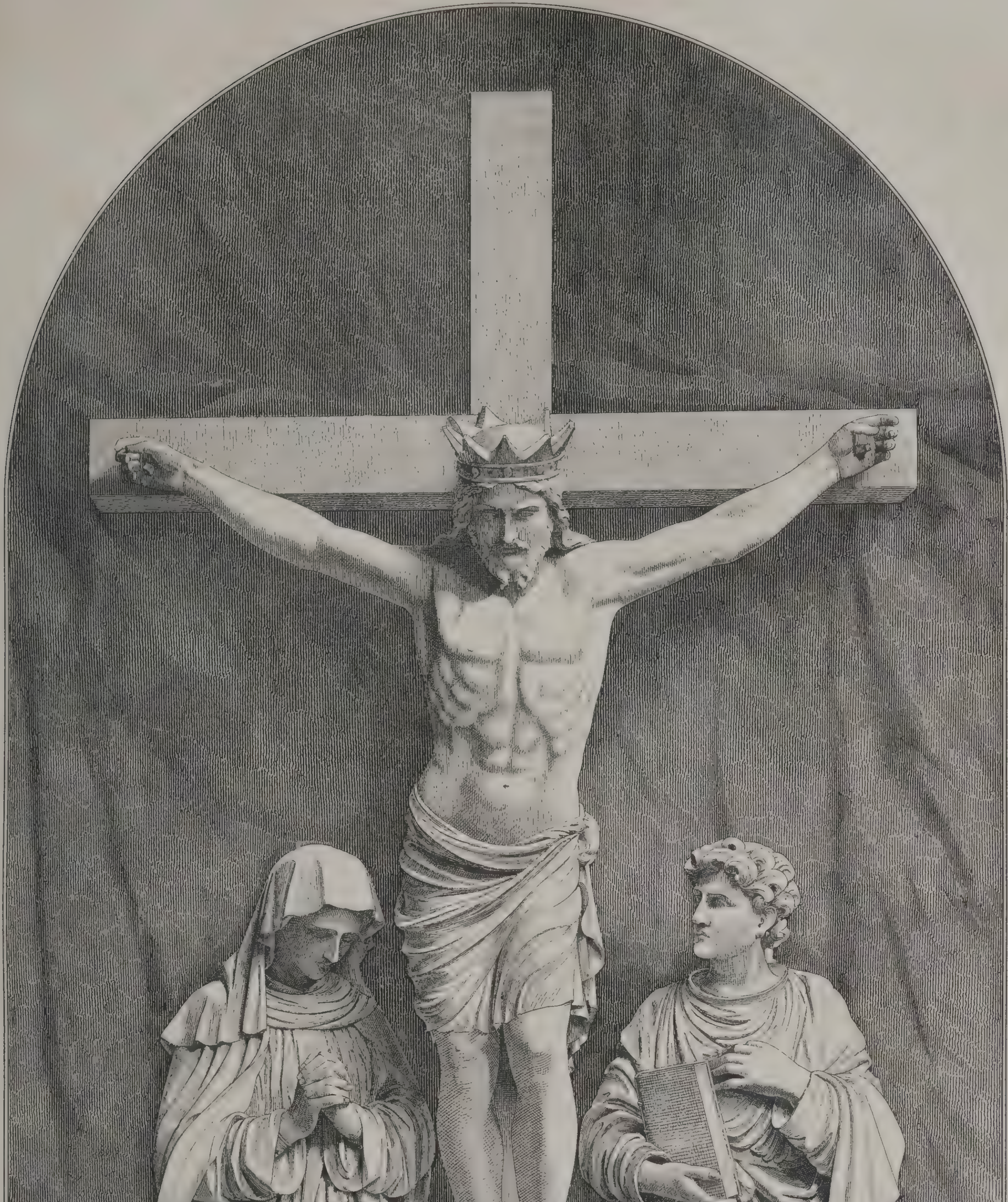
◆

The new Town-hall and Corn-exchange at Wareham will be completed by the end of the month



WEST PORCH ST ALBANS ABBEY HERTFORDSHIRE.

Photo-Lithographed by Whiteman & Bass, London



H Abbott Lith
Printed by Whiteman & Bass

CENTRE GROUP IN REREDOS, CHURCH OF S. ANDREW, PLAISTOW.

Building Materials, &c.

◆

SLATE AND ITS USES.

WITHIN the last twenty years the uses of slate as a building material have probably been multiplied a hundredfold. Introduced originally as a roofing material, its durability, the ease with which it could be worked, and its cheapness, speedily recommended its employment for a variety of purposes. Foremost among those who turned their attention to working slate stands the late firm of A. A. Robinson & Co. (now Ashton & Green, the senior partner having been a member in the late firm), of Bury-street, St. Mary Axe, E.C., and Bow Bridge, Stratford. The proprietors of the most extensive, as well as the oldest slate works, the business done by them is, as might be judged, the most extensive. A visit either to their show-rooms at Bury-street, or their works at Stratford, would well repay any of our readers.

The wharf at Bow Bridge is entirely devoted to the working of slate in its original condition, the works at the Farringdon Wharf, a few yards further down the road, being occupied by those whose business it is to produce in enamelled slate exquisite imitations of more costly materials, such as jasper, malachite, sienna, &c.

At the Bow Bridge wharf slates are to be seen of all dimensions, from the slab 9ft. by 5ft. to the tiny lamina of some 5in. by 4in., intended for use in galvanic batteries, and some 12,000 of which were in course of being split for a single order at the time of our visit. This is, however, a comparatively modest order compared with others which Messrs. Ashton & Green have at present on hand. Among these may be mentioned one for 5,000 water-closet frames for export. They are also supplying all the slates for the roofs of the large gasworks now being built at Barking, the new Woolwich Union, at Plumstead, Leavesden Asylum, and Strand Union, Edmonton. A leading feature of their business is the employment of slate for sanitary purposes, their "sanitary zigzag" urinal and lavatories being specially noticeable for economy of space and cost, as well as for its great cleanliness and privacy. Wine bins, portable houses for emigrants, vats, cisterns, chimney-pieces, billiard slabs, tombs, and mural tablets are a few only out of the articles too numerous to mention which are turned out in slate at Bow Bridge Works. To carry on this business, a large staff of hands, and a considerable amount of machinery, is of course necessary. A great quantity of the work has to be done by hand. All the splitting is effected by hand-labour, as is likewise the enamelling and polishing. Thus the employment of a large number of hands is necessary.

An important feature of the business consists of the manufacture of *enamelled* slate. By this process are produced imitations of the rarest marbles at a tithe of their cost. The substance thus produced is not only cheaper than marble, but bears a much more brilliant and permanent polish than stone will, while it has for its base a mineral infinitely stronger and more durable. The process of enamelling is interesting, though very simple. It is performed either by "dipping," "splashing," or by splashing and sponging combined, and some of the more elaborate patterns by hand-graining. The colours are applied by either of these methods, and the slab is then placed in an oven or heated chamber, the temperature of which is maintained at from 130° to 250°, according to the size and thickness of the slab. In this oven it remains for a period determined by the size of the slate, generally averaging twenty-four hours. It is then withdrawn, and a coating of specially prepared enamel applied. Again it goes into the oven, emerging from thence to be vigorously pumiced to reduce all inequalities of surface. This process of baking and pumicing is repeated, with some variations, three times more, and the slab is then in a condition fit for polishing. The polishing process is performed, firstly, with woollen cloths and fine sand; next, with French merino, the finest and softest that can be obtained; and finally with the hand and powdered rotten-stone.

By the processes thus hastily described, the most elaborate marbles and stones can be imitated. We saw specimens of Egyptian green, Lumachelle, and S. Ann's marbles, Pyrenees green, Swedish and purple porphyries, all kinds of granites, malachite, and lapis lazuli, all so well finished as scarcely to be distinguished from the costly originals. Architects' original designs can also be executed in inlays of any pattern.

The enamelled slates are principally used for chimney-pieces; and over a thousand of these, in all styles and at all prices, are kept in stock at the show-rooms, in Bury-street. Besides, however, they are largely in demand for facias, consoles, table tops, &c., for which their fine and durable polish well fit them. Some idea of the durability of the polish may be derived from the fact that we saw some landscapes and flower-pieces let into the room doors at Stratford which had been there for nearly twenty years, and the surfaces of which were as shining as if finished yesterday.

For the convenience of architects and builders, Messrs Ashton & Green keep in stock all kinds of stoves, thus enabling purchasers to match their stove and chimney-piece at the same time. Our space forbids us to do more than to allude to this department.

◆

CENTRE GROUP IN REREDOS, ST. ANDREW'S, PLAISTOW.

LAST week we gave an interior representation of this church, and we now supplement it with an illustration of the centre group in reredos, referred to last week. The group indicates the usual study and care bestowed upon it by Mr. Brooks, the architect.

◆

NOTES FROM GLASGOW.

(From a Correspondent.)

THE new University buildings, by Mr. G. G. Scott, are now rapidly approaching completion, and in the course of a few weeks they will be thrown open for the ensuing session. Of a design so well known to the readers of the Building News it is unnecessary to say anything, but a few words on the fated old college in High-street may not be out of place. The work of destruction has now fairly commenced, and its famous library and museum have been emptied and dismantled. Its halls and class-rooms are fast following suit, and before the finishing touches have been put to the college of the future the college of the past will have been swept away. So much do we care for the associations of centuries, and so highly do we value the memory of all that has raised Glasgow above the rank of a mere counting-house, that for the sake of as many thousands of pounds, it may be, as we have spent hundreds of thousands on our new college, we consign the nursery of genius to oblivion, and, as if to insult the memory of James Watt, we turn the birthplace of the steam-engine into a railway goods station. Truly, we have learned but too well the lessons Adam Smith taught in these halls.

It is now upwards of 400 years since Glasgow University, the second oldest in Scotland, was founded, being younger by thirty-seven years than that of S. Andrew's, and older by 132 years than the college of Edinburgh. Of the present building, however, but a small portion is older than three centuries, while the greater part of it dates from early in the seventeenth century. For some good views of it see Billing's "Baronial and Ecclesiastical Antiquities of Scotland." Before leaving this subject, I must mention that a correspondent of the *Herald* offered to contribute £500 or £1,000, if necessary, towards re-erecting the old college in the grounds of the new.

The new church of S. Mary's, also by Mr. G. G. Scott, is now making its appearance above ground. The old site in Renfield-street has been sold for £14,000 to the City of Glasgow Life Assurance Company, who have pulled down the church, and intend erecting themselves offices.

Building operations have been proceeding with extraordinary activity round Glasgow, and new suburbs are being formed in every direction. The Great Western-road is now lined for a mile and a half with large and handsome blocks of dwelling-houses. Dowanhill in the west end, and Pollokshields in the south-west, are being built up with detached villas, while Shawlands and Crosshill on the south side, Dennistoun in the east, and Possilpark in the north, are increasing in the same proportion.

The new Club-house, at the corner of Renfield-street and West George-street, has just been opened. It is a well-detailed and richly carved building in the Italian style, from designs by Mr. David Bryce, of Edinburgh.

The dismal grain stores at the corner of Gordon-street and Hope-street are now being transformed into handsome offices and shops under the direction of Messrs. Boucher and Cousland. It was formerly intended to erect a group of public halls on this site, but the idea has been abandoned. Let us hope that Glasgow will not have much longer to wait for a City Hall worthy of itself. This should not be a private speculation, but should be taken in hand by the magistrates and carried out as it deserves. Let them take example by Manchester, and call an open competition to be decided by competent judges. If they offer liberal terms and engage architects qualified to decide, they need not despair of obtaining the highest talent in the kingdom.

I observe, in the *Daily Mail*, 10th inst., a proposal to pull down S. George's Church, in order to clear the street for traffic. In the first place the church is no obstruction to George's-street, and in the second place its fine spire would be a great loss to the city.

On Thursday, the 8th inst., a new public park to the north-east of the city was formally opened by the Lord-Provost and magistrates. It is named the Alexandra Park.

The competition for a fountain to commemorate the introduction of the Loch Katrine water has not yet been decided. It is contended by a member of the Water-Trust that they have no power to spend the ratepayers' money on any other object than the supply of water. Surely this question should have been decided before designs involving such an amount of labour were obtained. I have just been favoured with a short inspection of the drawings submitted, and, without attempting a detailed criticism, I shall venture upon a few remarks. On entering the room one is immediately attracted by a large drawing (about 10ft. by 7ft.) which, along with a number of smaller ones, illustrates a design in the Greek style. It is under the motto "Athenian," but its author is at once identified as a gentleman who has long been celebrated for his successful treatment of that style. It consists of a basin 200ft. in diameter, round which lions are placed at intervals. On the stage above this are placed serpents, and above this again rises a Doric temple, measuring 42ft. across. This is surmounted by a second temple, surrounded by eagles, from the top of which rises, amid a cluster of palm leaves, a huge pole like the mast of a vessel, which, at the height of 100ft. from the ground, breaks out again into palm leaves, and, rising 20ft. or 30ft. higher, throws into the air a jet of water. From the base of this pole water is thrown into the outer basin in a circle about 100ft. in diameter. This design is the most imposing and, I may add, the most expensive.

Another Greek design, under the motto "Vertutis gloria mercis," is good, and the figures are very well drawn, but it is too much of a monument and too little of a fountain.

An Italian design, under the motto "Vita brevis, ars longa," is next to be noticed. It is in pencil, on tinted paper, and the drawing seems rather faint, but the design is both rich and graceful.

Another Italian design, "Trident," is very simple, and if the sculpture were well carried out would make a good fountain.

Three designs, marked G, are all poor, and bear a strong family resemblance. No. 3 is surmounted by a gentleman bearing a dress hat.

Though the instructions stipulated that no colour should be used except blue on the water, a number of the competitors seem to have forgotten this. A Gothic design, marked "Thorough," is brilliantly coloured with orange, purple, and green. The effect is peculiar.

"Aquarius" is a clever design in the Gothic style.

I have only mentioned a few of the most striking drawings. Many of the others possess great merit, and, in spite of a few which are beneath criticism, the collection is very well worthy of being publicly exhibited.

PROPOSED NEW CORN EXCHANGE AND FRUIT MARKET, SHEFFIELD.

THE want of better accommodation at the Sheffield Corn Exchange has long been felt, and the lord of the manor (the Duke of Norfolk) having given his consent to the proposed improvements, Mr. Marcus Smith and Mr. Hadfield have visited a number of important towns with the view of coming to a conclusion as to what should be done. So far as the plans are already matured, it seems to be intended (says the *Sheffield Daily Telegraph*) that a well-proportioned building shall be erected on the site of the present Corn Exchange, with shops on each side, fronting Exchange-street and Broad-street. The new Corn Exchange thus to be formed in the centre will be 90ft. square. The hay-market is to be removed to the same site as that set apart for the cattle market, and the spaces on either side of the new Exchange will be covered in, and for the future used as a fruit and vegetable market. Under the Corn Exchange there will be extensive cellarage, and the accommodation to be provided for the wholesale fruit and vegetable trade will be very superior, in connection with the large space which is to be covered in.

THE BRITISH ARCHÆOLOGICAL ASSOCIATION AT HEREFORD.

THE annual Congress of the above association was held this year in Hereford, the proceedings commencing on Monday, the 5th inst., and terminating on Saturday last.

The opening of the Congress took place a few minutes after three o'clock on Monday, in the spacious assembly room at the Green Dragon Hotel, the president for the year being Mr. Chandos Wren Hoskyns, M.P.

The Mayor and Corporation having arrived, an address of welcome was formally presented, and

The president proceeded to deliver his inaugural address. Having offered the association a cordial welcome, and expressed the hope that every hour of their presence would be productive of gratification, he said that had he been led to think that in the part assigned to him there was involved any emprise beyond the homely and hearty expression of a Herefordshire welcome, nothing should have induced him to enter upon the duty of the hour. But the mission of the illustrious society whose 27th anniversary was held there was to teach, not to listen—to point out with all the aids and advantages of widely-gathered antiquarian skill and experience the precious and too often overlooked or forgotten history of many local monuments of the past, such as their own district so richly furnished. He had, however, not now to learn that true knowledge is ever gentle and forbearing—that it knows well how to sympathise with the most imperfect efforts—nay, to condone even with ignorance itself which desires to learn. Such was the feeling under which he ventured to weave into the offering of their welcome a few thoughts and questionings that occurred to him and to others in reference to the archæological features of the district which formed the scene of their session of 1870. We were all archæologists at heart, and liked to feel that we belonged to the past, that our roots lay deep like those of the native oaks of our country, that there are old weather-beaten links that connect us with the almost forgotten days of an ancestral world whose death but not memory had passed away. It would seem like a waste of time were he to attempt a panegyric upon a branch of knowledge now so popular and so justly valued as that of archæology. We had only to look at the language of every historian who had written within the last twenty years to witness the relation into which archæology had now entered as the acknowledged handmaid of history. So remarkable had been this progress that it could hardly fail to have awakened in many minds a reflection that had taken something of the form of parodox--that the older the world grew the more it should seem to care, the more curious it became, and in truth the more it learned about its origin, ethnological, linguistic, and historical. In the ordinary, reference to the past should belong to the class of subjects to which time brought diminishing interest, and should suffer from the presence of the busy world around us. So far was this from the fact that every work that issued from the press on history, on language and philology, on race, on geographical discovery, and the physical history of the globe, even on general literature, contradicted emphatically such a conclusion. It almost seemed, on the contrary, as if it had been reserved for this latter age to open out a new and extending horizon, derived as from a new world of old matter. What was less than a generation ago looked upon as a topic of rare, almost eccentric curiosity to a small knot of inquirers, had by gradual but well-marked steps dilated into a broad front of eager and extending research, and that too, not in one but in many directions, the joint effect of which was in some respects to throw a fresh significance upon every branch of history, and claim for archæology a position amongst the most valued studies of the world's advanced age. Some there were, it was true, who regarded the pursuit of it as "unpractical." But he ventured to think that a little comparison would show that this was not only erroneous, but opposed to some of the best practical evidences that could possibly exist of the relative value and position of human studies. In politics, in ethics, in metaphysics, in poetry—viewed abstractedly as studies—in painting and sculpture, in geometry, architecture, and in decorative skill, viewed as arts, the vertebral principles, so to speak, had been before the world unaugmented by any established addition or discovery for the last two or three thousand years. For the four first that he had mentioned, the names of Apelles, Phidias, Archimedes, and the artists of Nineveh, Thebes, Athens, and Pompeii, stood to this day unrivalled, almost unapproached. These subjects had been, in a certain sense, argued out; nothing really new (with one great exception) has been said about them for ages past, nor seems likely for ages to come. It was not so with archæology; the study which but the other day was regarded as the harmless pursuit of the curious and eccentric—gropers among the dry bones of the past—had now awakened into such life and meaning, as to startle even the most incredulous with facts that presented an organised shape no more possible to pass by or overlook than would be one of those extinct giant creatures of our globe, were it suddenly to arise before us at the recreating touch of a Cuvier or an Owen from one or two fossil bones of its stupendous form. Indeed it was in exact anology with such a recreative power as this that archæology developed its most useful results. It restored to the mere skeleton of history or tradition the flesh and lineaments—the very bearing and expression which each age wore as it passed by. We see the illustrious figures of the past moving over the stage of life, as Macbeth saw in spectral procession the future of Scotland's monarchy, even down to that one who showed a double crown, by which with transcendant art our great poet brought down the story of his immortal drama to the time and into the very hearts of his audience. The history of our race, which even up to our own day was content, indeed compelled, to walk alone by the light of tradition, or of documentary evidence not always more reliable or authentic, was now companioned by an active colleague who took nothing for granted, owed little to theory or hypothesis, but pointed to earthly vestiges, substantive records, visible and tangible existences, that have awakened a new century of thought, and seemed to enlarge not only the scope but the very scale of our contemplation. As an illustration of his words: less than a generation back, if an antiquary had been questioned where the most ancient monuments or vestiges of our race were to be found, he would at once have pointed to Egypt or to the East. Very different would be his answer now. Without going out of Europe, without even crossing that narrow channel which so graciously divides us from its complications—on banks, once the extended beds of familiar English rivers; beneath the soil of many a modern village, indubitable traces were to be found of human life and habitation, reaching up to a period so remote that in comparison with those primeval denizens of our island the Shepherd Kings of Egypt, or the almost fabulous dynasties of India and China, would seem but men of yesterday. It might almost raise a smile to see the antiquary of the last generation paying reverence to a coin or fragment of pottery, for its extreme antiquity reaching to some three or four thousand years, while beneath his very feet reposed the long-forgotten implements and weapons of men who saw the hippopotamus floundering and basking in the mud of the Severn or the Thames, or tracked the stately mammoth to his lair in the neighbouring Forest of Dean, or transfixed the giant reindeer with bone-headed arrows and scooped out its marrow with flint knives. Such were the thoughts which unavoidably suggested themselves to the contemplation of archæology and the sciences in close alliance with it. Passing on to ask in the spirit of inquiry the solution of some of the difficulties the archæologist would meet with in Herefordshire, the president entered on a close examination of the origin of the Silures, who so differed at the time of the Roman invasion from the inhabitants of Eastern Britain, and then concluded his eloquent address.

Votes of thanks having been passed to the President and the Mayor and Corporation, the proceedings, so far, were brought to a termination.

Several members of the association, under the guidance of Mr. F. R. Kempson and Mr. Flavell Edmunds, proceeded next to make an inspection of some of the more noteworthy antiquities of the city. The weather, however, was not very propitious for an out-door excursion, there being a sharp downfall of rain at the time, which lasted, more or less, indeed, throughout the remainder of the afternoon.

The party, passing down Broad-street, took their way first of all to the site of the gate formerly leading into the city at the Barton. The party proceeded from this point along Victoria-street, tracing on the way, and stopping at intervals to examine, the remains of the old city wall. The Coningsby Hospital and the remains in the rear of the Monastery of the Black Friars were next visited. Pausing before entering, Mr. Edmunds, having explained preliminarily that the former building was erected (about the year 1614) by Sir Thomas Coningsby, Knight, on the site of a small hospital formerly belonging to the Knights Hospitallers of Jerusalem, as an asylum for worn-out soldiers and faithful servitors, directed attention to the singular heraldic components of the arms over the doorway.

The inaugural dinner was held at the Green Dragon Hotel, on Monday evening. Covers were laid for 60, and it was expected at one time that a hundred or more would have been present. But, unfortunately, from some cause or other, the number dwindled down to 35.

The archæologists commenced on Tuesday morning by attending Divine service at the Cathedral, immediately on the conclusion of which they met outside the north entrance, or Bishop Booth's porch, and were conducted over the Cathedral by Mr. Gordon M. Hills and the Rev. F. T. Havergal, the former gentleman delivering an address on its architectural history, whilst the latter pointed out the various objects of interest. An examination of the Cathedral monuments was then made, and a description given of them by the Rev. C. Boutell.

After an early dinner at the Dragon the party started on their afternoon excursion.

The party, to the number of about seventeen, started in two omnibuses, at half-past three, to pay a visit to the site of the Roman city of Magna Castra, Kenchester, and to the camp at Credenhill. The former consists now of some three or four fields, partly under tillage and partly pasture, situate on somewhat of an eminence, in the parish of Kenchester, facing Credenhill. It is a sort of plateau of a little under a mile in extent, and is, of course, elevated above the surrounding land. The site of the city rises abruptly from the lower land on the north. The position of the wall, which must have existed here on this side in the days of the Romans, was clearly traced, and several fragments of Roman pottery were picked up on the newly-ploughed soil.

Mr. Thomas Wright was pressed to say a few words on the subject of Magna Castra, and, complying with the request, remarked that he could not say much, except that the party were standing at that moment in a Roman city. He visited the spot 20 years ago, and there were more walls then than now. They were good Roman-built walls, no doubt raised a little above the ground, and, what it was not uncommon to find in Roman buildings, with herring-bone work. But he had no recollection whatever of the boundaries of the town, or the shape of it. There were, however, at that time raised portions of ground here and there. From these facts, and from the fact also that Roman fragments, coins, and so on, were frequently turned up by the plough, there could be no doubt that it had been a city of great importance. We had in the Itineraries of Roman Britain the names of different towns and stations marked down, with their distances from one another along the wall. These had been fully traced till there was not one with whose site they were not perfectly acquainted. In one ancient authority the city on which they now stood was called Magna, and in another Magna Castra, which meant simply the great fortress. They had nothing further relating to the place itself. One could hardly doubt from the particular form of the name that it must have been a place of some size that it should be distinguished as the great Castra. The only thing that could be done would be to take and explore the city, which had not, as yet, been done to any extent. One could not, as he had said before, dig far under ground without turning up Roman relics of some kind; things had been picked up here and there, and collected from a very early period. Generally these sites got mixed up with superstitions of one sort and another; thus the coins found there were called fairy or elves' money, while the chair which formerly stood here was called the fairies' chair.

Farewell was then bidden to Magna Castra, the archæologists making their way back to the turnpike-road and again taking coach for Credenhill. They were received at the park entrance gate by the occupier, Mr. F. W. Herbert, and by that gentleman conducted through his own grounds, and thence by a winding path along the hill-side to the encampment which crowns the summit. Upon the summit of the hill the party seated themselves whilst Mr. Gordon Hills read a very interesting paper written by Mr. Flavell Edmunds, and already published, descriptive of the camp, and suggestive of its date, origin, uses, and so forth. The paper was admitted to be extremely valuable, and its reading was received with considerable applause. An elaborate address, embodying a learned and somewhat complicated theory of his own upon not only the Credenhill encampment, but upon the Roman encampments and their routes in general, was delivered by Mr. W. H. Black, F.S.A., supplemental remarks being added by Mr. E. Roberts, F.S A., and Mr. J. F. Symonds, after which the party again sought the omnibuses, arriving in Hereford at about eight o'clock.

The evening meeting was held in the Assembly-room of the Green Dragon at 8.30, when, in the absence of the President at another meeting, Mr. G. Godwin, F.R.S., F.S.A., one of the vice-presidents, was elected to the chair. There was a fair attendance.

Mr. E. Roberts, F.S.A., at the request of the chairman, gave a short account of the proceedings of the day.

Mr. W. H. Black, F.S.A., the Hon. Palæographer of the Association, was next called upon to supplement his remarks made at the afternoon meeting with reference to Credenhill, and he at once obeyed the call. This gentleman, as would appear from a long, learned, and most interesting speech, claims to have discovered that the Roman places of sepulture were to the persons to whom they owed their formation nothing more nor less than fixed points in a system of determining and fixing their lines of latitude and longitude, a system which extended all over the then known world wherever the Roman arms penetrated. He has, after much research, been able to determine to a very great nicety the exact length of a Roman foot, so much in dispute, and from which many errors of computation have arisen. And having once discovered this, he maintains that the plan of Roman burial, and not only that, but the plans of their cities, and even of the wards of large cities, are reducible to a theory of measurement which he has been able to determine with the greatest nicety. He has tested his plan by comparing it with the admeasurements laid down in copies of the old Roman maps, sketched by the *Agramensoras*, the only reliable map, however, being, as he says, the one published in 1544. The *Agramensoras*, he holds, were enabled to draw their maps with the greatest accuracy, and so accurate are the lines of latitude and longitude into which this theory is reducible as proved by admeasurement that they differ in not so much as a second of time in most instances, but wherever there is an error it is not more than a second. Basing his observations upon this theory, Mr. Black asserts that Credenhill is, or was, one grand centre in this county, from which the Romans had several lines of divergence and parallels to be determined with the extremest accuracy. Offa's Dyke, too, hitherto held to be of purely Saxon origin, he says gives him ample evidence of having been formed long before Offa's time, and indeed, to be of purely Roman origin. Again, at the Whitecross, he cared not who might have rebuilt it, he said most decidedly that a cross had been there from the time of the Roman emperors, and the bases that are now there were probably Roman imperial. There were many of these crosses treated of in history, and they knew full well that the Emperor Constantine, and different emperors after him, erected crosses. The fact was there was a great line passing through the country, and he held the Whitecross to be one of the points on making that line. This theory he even carried out so far as to say it was applicable to and explanatory of the many peculiar irregularities that are to be found in the boundary lines of counties, where some peculiar tongue of land was found obviously belonging to one county yet running most persistently into another. And why was this? Simply because it extended to a certain point which gave a distance comparable and equal to a known distance in another direction. He maintained that the plans of cities and boroughs, as defined at the passing of the Act of 1832, were most essentially Roman in their construction, and remained so to the present day, except where some stupid Act of Parliament, or some equally stupid exchange of property had taken place and upset the original outline. And thus it was, he argued, that these lines of boundaries were handed down as traditions by a continuity of race on the soil. He contended that the better this system was understood, the more certainly it was comprehended, the more infallible its principles were found to be, and the more appreciable would the revival of the principles of these marvellous men of science appear, whose functions and duties had been involved in so much obscurity that they seemed to have been forgotten.

The Rev. F. T. Havergal said he had been told that during the day it had been suggested that the shrine in the cathedral bearing that name was not Cantilupe's shrine. He was called away from the party at the time, and had been unable to hear Mr. Hill's observations on that point.

Mr. Gordon Hill said he had suggested to Mr. Boutell a question for solution. He pointed out how the shrine had been moved about from one part of the cathedral to the other and to the Ladye Chapel, and suggested was it not singular that it should appear like a monument that had been taken to pieces. It was difficult to reconcile some parts of it with the others, and there was little, he thought, to mark it as being the tomb of an ecclesiastic, seeing that it was surrounded by armed figures. It was rather a suggestion of doubt than an attempt to pronounce an opinion.

Mr. Havergal said he was fully aware of the vicissitudes the tomb had been exposed to in removal; still, throughout six centuries opinion had clung to the shrine that it was essentially the monument placed in Hereford Cathedral to the memory of Bishop Cantilupe. He could only add that, if they had been in the dark during these six centuries, it was but reasonable to ask for some clue to a right solution. They must surely ask, then, to whose honour and memory was it placed? One other little point he would mention—that the north transept was not built for the shrine of Cantilupe; it was merely placed there, and the north transept called the Cantilupe transept, for convenience, and our common usage.

The Congress proceeded on Wednesday from the Barr's Court-station to S. Devereux, where they alighted and made the inspection of Kilpeck Church.

Mr. T. Blashill conducted the party over the building, and pointed out the peculiarities evidenced in its several features of architecture. The church, he said, is dedicated to S. David, and has long been reckoned as amongst the most remarkable buildings of the twelfth century, clearly belonging to the first half of that century, and being somewhere of coëval date with Shobdon. It was given to the Abbey of Gloucester. It was impossible to speak of the church without recurring to the old church of Shobdon, in which everything peculiar was strongly developed here; and it was clear that if it was not erected by the same builder it was, at least, built under the same supervision, and, though the architect was not influenced in some respects in producing some part of the work, the general design was of the twelfth century, as evidenced in the general arrangement of the doors, windows, &c. He pointed out the flat balustrades on the walls as being the first attempt at buttresses, the corbel table round the building, and other features, as being common, not only in this country, but over the whole of the west of Europe at the time of erection. Pointing out the remarkable features in the carving of the grand old doorway, as being composed of figures of monsters mixed up with birds, &c., it would be seen that they bore a comparison with others of a like character in the Church of S. James's, Compostella, built in 1115, of which he produced drawings. Other features of the carving were of an earlier date, showing that the man who did the work evidently set himself to adopt an ancient style, and although it was seen that this more ancient style peeped out in different parts of the country, yet it was only here that a determined effort seemed to have been made to develope it into the artistic. Both Shobdon and Kilpeck, it would be remembered, were enclosed by Offa's Dyke, and were anciently in the bishopric of Llandaff. The whole composition of the doorway looked like the work of a man not accustomed to carving in stone, yet who was particularly familiar with the old Celtic style of ornament. The figures on the left jamb had been said to represent Welsh knights; by others—and perhaps the best authority—they were said to be Anglo-Saxon figures, such figures as were seen in the old drawings of that period, and it was possible the sculptor might have copied the old-fashioned things of his day. The characteristic figures of heads of monsters at the angles had no parallel in English work, and his suggestion was that they might have been but copies of the heads on the wall-plate, run out on an anterior wooden building. The speaker directed especial attention to the west window, a beautiful example of Celtic carved work, which might be compared with much of Irish carved stone; his explanation of its superior width was that it had originally an inner member, which had been removed at some time to make room for the more modern glazing. The bell-gable was but an imitation to harmonise with the other portions of the church. Passing to the inside of the church, Mr. Blashill again directed attention to the rude carvings of human figures on the sides, supposed by some to be Saxon and to represent the Saxon costume. The chancel arch received the first attention, and the fully-developed Norman style of general design was noticed; the ornamentation was shown by the speaker to contain elements of the Celtic ornament observed elsewhere, on the outside, and the capitals of the columns, though in accordance with the ordinary Norman style, were yet not Norman, having the twisted neck mouldings. In fact, Mr. Blashill said his impression was that the Church was not such an early Norman erection as had been supposed; yet the man who built it, and still more the man who built Shobdon, showed by his work that he knew thoroughly well how to put a base to a column. The chancel and sanctuary apse were features of peculiar interest to the party, the latter containing two ancient aumbries, and a most remarkable stoup, of ancient form and workmanship; the bowl itself is clasped round by the arms of a figure, the head of which is broken off, and at the base is represented Satan subverted.

Mr. W. H. Black offered some remarks at the close of Mr. Blashill's explanations, claiming that the church was of still more early erection than represented by him. He maintained that this was proved by the ancient "Book of Llandaff," a book which he was thoroughly familiar with, having prepared the text for the work edited by Dr. Reece, of Gascoyne. In that record it was distinctly stated that of the churches dedicated by a certain bishop about the year 1,100, Kilpeck was one. If that was so he thought they must carry back the erection of the building to a much older date.

Mr. G. Godwin and Mr. Roberts followed with a few observations, agreeing with Mr. Blashill, that though they did not deny that there had been an earlier foundation, yet they maintained that the building as it stood was essentially a twelfth-century erection.

After a somewhat circuitous drive, part of the way through a pelting shower, the party arrived at that grand old remnant of the Cistercian monks—Abbeydore—of which Mr. G. M. Hill gave a description. Mr. Hill's special attention was directed to explaining the uses, erection, and arrangement of the cloisters and chapels running round the church and even the back of the altar; pointing out the various indications of former grandeur and the uses of different portions of the building. A remarkable object of interest to the party was a small stone, bearing the incised figure of a saint and a small inscription on each side. The figure is that of a bishop, and the stone itself is some 15in. long by 9½in. at the top, tapering to 9 at the foot of the figure. The inscription is much defaced towards its commencement on both sides, the first word being entirely defaced. As it stands it reads thus :—

A : PONTIFICIS : COI
XPSTE : JOHA

After some little pains on the part both of Mr. Black and the Rev. C. Boutell, the original was thus restored :—

SERVA : PONTIFICIS : COR :
SANCTVM : XPSTE : JOHANNES,

or, "O Christ, preserve the holy heart of Pontiff John." It was shown that the stone was of great value to archæology, especially as there are but two or three other known instances remaining of coverings of the holy remains of parts of the bodies of saints in existence; and especially as confirming in some degree the story of the "boy bishop" of Salisbury. The stone is not fixed anywhere, but allowed to lay neglected, and it was suggested that as a means of security it should be fixed in the wall.

After journeying back to Pontrilas, where luncheon was partaken of, the party next proceeded to Rowlstone, the peculiarities in the carved remains of which, together with a general notice of its architectural features, were pointed out and explained by Mr. Blashill. The church is dedicated to S. Peter, and is of Norman erection, dating from 1130 to 1150. Its sculpturings are somewhat peculiar. The principal objects of interest are a fine tympanum enclosed under a modern stone porch, the subject of the tympanum being the "majesty" personified by our Lord, seated, with a book in the left hand, the right hand being uplifted in the act of blessing. The figure is surrounded by an aureole upheld by four angels, and altogether in a good state of preservation. It is somewhat smaller than that at Shobdon, and the subject, Mr. Blashill said, was a favourite one in the catacombs of Rome as early as the fourth century. The whole is surrounded and upheld by four angels, very similar in design, though somewhat different in detail to the tympanum at Shobdon. Other peculiarities in the doorway are the large roll moulding by which it is surrounded, intended to imitate the Attic base; and the dropping of the tympanum itself below the capitals of the supporting columns, an arrangement, Mr. Blashill said, which was designed to give more space for the subject. In the interior of the church the most remarkable feature is the sculpturing of the chancel-arch, where are figures represented with their heads downwards, and evidently carved in the position they occupy. This was explained on the theory that when it was considered as usual to illustrate about a building the attributes of the saint to whom it was dedicated, the inversion of the figure of S. Peter, who chose to be so crucified, was readily to be accounted for. The second and accompanying figure, evidently having wings and bearing a scroll, was generally thought to represent an angel, but Mr. Blashill said his own opinion was that it was nothing more nor less than an illustration in another way of the saint himself at a different period of his life, especially as tradition said the sentences of the creed were severally supplied by the Apostles, each having his contribution written on a scroll. It was common in old times to draw each particular Apostle with a scroll bearing a sentence of the creed; and in Samuel Dowzing's Journal it was stated that, at the time of the Commonwealth, persons were employed to go through the churches and break up all superstitious pictures, and he mentioned that, among others, there were "pictures of Peter with his head downwards, and ten or a dozen others." Not a very common feature in Norman carving, known as the "trowel point"—from the fact of it appearing to have been pressed in with the point of that tool—is seen to exist in this chancel-arch, its existence being specially pointed out. Two very interesting features in the chancel are a pair of iron candelabra, dating probably from the fourteenth or fifteenth century. They are in the form of a long bracket on either side, made to contain some half-a-dozen lights each, stuck on a point on the lower portion, and the tops of the candles passing through rings set between two iron bands on the top. The figure of the cock—a token of S. Peter—alternates between the spaces for the provision of lights, the whole having been painted and the ormanental parts gilded at the time of the restoration of the church. There are stone projections on either side the altar, probably the brackets which formerly supported some effigy or other, and it issuggested that the candelabra were intended to light up these effigies during the celebration of the Mass, the effigies being in close contiguity. It is owning, no doubt, to the out-of-the-way position of this little church that these relics, together with S. Peter "with his head downwards," escaped the time alluded to by Dowzing.

Another drive along a narrow road, and the party came upon Grosmont. The church and castle were described by Mr. E. Roberts. The church is a large rambling old-fashioned building, being restored by Mr. Seddon. It consists of a chancel of ample dimensions, central tower, and nave; the tower being octagonal on a square base, and surmounted by a spire. The nave, a very spacious one of five bays in length, is now screened off at the western tower arch. On the right-hand side of the chancel is a small chapel, entered from it by the original doorway, and on the west side of the transept is a chamber. The transepts have been used as chantries, and on the west side of the south transept there are the remains of a doorway giving entrance from the narrow aisle. The church was dedicated to S. Nicholas by Eleanor of Provence, wife of Henry III., about the year 1261. But the history of the church evidently did not begin with her; for the supports of the tower and other portions clearly showed that they belonged to a century earlier date, although it was just possible that the pointed arches might not have been imposed on their present pillars at quite so early a date. The nave is of a slightly later date, accounted for by the fact that the earlier churches were usually commenced from the east, and added to at their western extremities. Therefore what Queen Eleanor might perhaps have done was to re-build some considerable portion of the church, and perhaps to rebuild the chantrey intended for services for the salvation of her soul. In the course of his examination of documents, Mr. Roberts added, the earliest record he found of Grosmont was in the reign of King John. The chancel, he should here say, had been entirely rebuilt under the supervision of Mr. Seddon, who, wherever he found work that could not be retained, had had the good sense to introduce as much of the old stone-work as he possibly could, placing on the one side what might be called a sedilia, and on the other a credence which was not there before. The piscina is a beautiful remnant of its kind, retaining in a pretty perfect state a capital example of the dog-tooth moulding.

Adjourning to the picturesque ruins of the Castle, with its deep ditch and perfect doorway, showing where the ancient portcullis once frowned, Mr. Roberts described its arrangements in short detail.

The members of the Association having been invited by the Bishop to a *conversazione* at the Palace for this evening, assembled there in considerable force at half-past eight.

The chair was occupied by the President (Mr. Chandos Wren Hoskyns), and the soirée was opened, after a few words of introduction from the Chairman, with an address by the Rev. W. L. Beavan, M.A., on the celebrated *Mappi Mundi*, or pictorial map of the world, preserved in the Cathedral. This map has been an object of interest to geographers and antiquaries since the year 1780, when a description of it appeared in Gough's "British Topography." Nothing was known by those who first studied the map either of its connection with the Cathedral of Hereford, or of its date, except what was gathered from internal evidence. M. Lelewel, from the style of its penmanship, conceived that it was executed about 1220. M. d'Avezac, ingeniously comparing the course of historical events in the fourteenth century with the political divisions as indicated in the map in respect to France, Burgundy, and Flanders, concludes its date to have been between 1313 and 1320. English antiquaries have pronounced the style of writing to belong to the twenty years from 1290 to 1310. But recent researches in cathedral records have fortunately furnished us with sure grounds as to its proximate date, and as to it connection with the Cathedral. Richard of Haldingham, having previously held office in Lincoln Cathedral, was endowed with the prebendal stall of Norton in Hereford, and retained his prebend from 1290 to 1310. He was subsequently connected with the chapter of Salisbury, and became Archdeacon of Berks. It can hardly be doubted that the map was executed while he was prebendary of Hereford, and the period which is thus defined satisfactorily coincides with the conclusion of the English antiquaries from the style of the work. The map is drawn in accordance with the notion which, with modifications from time to time, was the prevailing one in Christendom for more than seven centuries, from the time of Orosius and S. Augustin, until travellers in distant regions became more numerous, observant, and communicative. The habitable earth is represented as a circular island, with the "ocean-stream" flowing round it. Jerusalem is placed in the centre. Asia occupies nearly the whole upper (or Eastern) half of the circle, while Europe holds the lower quarter on the left hand, and Africa that on the right. This arrangement is common to most of the mediæval maps of the world. But the Hereford map is distinguished from the rest by its great size, its elaborate drawing, its illustrations of objects in natural history and of historical facts, and its numerous inscriptions, many of which are of great interest in an archæological point of view; and it may be regarded as the most complete representation in existence of those speculative notions of our forefathers regarding the earth, which speedily gave way upon the advance of actual geographical knowledge in the fifteenth century. The interest of the map is greatly increased by the decidedly religious character of its chief illustrations. In a sort of gable over the circular border is a striking and curious representation of the "Last Judgment;" and in the map itself the "Eating of the Forbidden Fruit in the Garden of Eden," the "Crucifixion on Mount Calvary," and other events in Biblical and ecclesiastical history, are prominently shown. Many of the legends partake of the same character. This fact, together with the peculiar form of the drawings, has furnished ground for a conjecture that it was intended for an altar-piece of one of the chapels of the Cathedral. The map, which has formed at various times the subject of numerous essays, is elaborately drawn in colours on vellum, and shows that its author must have been a distinguished caligrapher. But the ravages of time are too perceptible in the work, and some parts can only be deciphered with difficulty. It is obviously desirable that a very correct copy of it should be made while it is still possible to reproduce the colours of the original, as well as the drawing and the writing. A document so important in its bearing, not only on the history of scientific knowledge, but on the legends of the middle ages, should not be suffered to perish, and ought to be placed within easy reach of students at home and abroad; and it is therefore proposed to publish a *facsimile*, executed with the utmost care in coloured lithography, to be accompanied by a photograph of 15in. in diameter, by which the critical accuracy of the copy may be perfectly tested with the aid of a glass. Letterpress will be added, which will contain all that is known of the author, copies of the whole of the legends in the map, with explanations and a critical examination of the map and of its place in the history of cartography. It is expected that this work will be published about the latter part of the year (1870), and specimens of it, admirably executed under the direction of Mr. G. C. Haddon, architect, of this city, were with the original now exhibited.

The proceedings were resumed with the reading of a long paper, written by Mr. H. F. Holt, F.S.A., on the "Ecclesiastical Statement of Hereford," after which, the Rev. F. T. Havergal gave a description of the Norman hall of the bishop's palace, which consisted formerly of five, but now of only three bays of arches, the timber (oak) in which was of a growth anterior to the Conquest and was even now perfectly sound. Mr. Havergal illustrated his lecture by diagrams, the bishop also adding a few words on the same topic.

The party, after inspecting some specimens of ancient seals of the see, a series of drawings and photographs of the cathedral (going back for a great number of years), and a variety of other interesting objects, the party took their leave.

The party visited on Thursday the ancient Priory Church of Leominster, from thence they proceeded by carriage to Monkland Church, where they were kindly received by the Rev. Sir Henry Baker, Bart. Then on to Dilwyn and Weobley Churches, where they were severally received by the Rev. Dr. Heather and the Rev. W. H. Phillott, visiting by the way the gate of the old castle. The customary meeting followed in the evening at the Dragon Assembly-rooms, where the Rev. Canon Jebb delivered a most interesting lecture on "Palæography, illustrating the history and connection of Alphabets," and Mr. W. H. Black gave a graphic reading of many of the ancient documents contained in the Archives of the city and of the cathedral.

COMPETITION.

The New Workhouse Infirmary at Leeds.—The Leeds Board of Guardians met at half-pas ten o'clock on Wednesday, the 7th inst., to discusst the merits of the seven plans recommended by the committee for consideration, and selected by them out of 27 submitted. After careful deliberation the Board decided upon awarding the first prize of £50 to No. 20, "Leodiensis," and the second of £30 to No. 11, "Machaon." Fourteen members voted in favour of No. 20, for the rest the supporters were few. Two divisions took place for the second prize. In the first No. 11 secured 9, and in the second voting, when the list had been reduced, 12 gave in their support. On the letters of the competitors being opened, it was found that Mr. H. Walker, of 11, East Parade, had sent in No. 20, and Mr. W. Bakewell, of 12, East Parade, No. 11. It is strictly understood that the estimates shall not exceed the maximum amount allowed by the Board—namely, £60 per bed, and the number of beds for which provision is to be made is 200. Should it be discovered that Mr. Walker's plan cannot be carried into effect at the limit fixed, he will lose the prize. At a later period of the day the Board agreed to throw the plans open for public inspection until the 21st inst., during office hours. The infirmary proposed by Mr. Walker is in the Gothic style, and designed on the pavilion principle. The structure is intended to be built of red brick, with sandstone dressings, and with Bradford stone for the staircases and landings. If desirable, ophthalmic or itch wards may be added, without interfering with the general plan; and entirely separate from the hospital Mr. Walker proposes to erect a commodious lodge.

ARCHITECTURAL AND ARCHÆOLOGICAL SOCIETIES.

Birmingham and Midland Institute Archæological Excursion.—"The ancient camps on the Malvern Hills" were the attraction for a special "walking excursion" of this society on Tuesday, when some twenty members of the Archæological Section left for Malvern at 9 a.m. The excursionists were joined by Mr. H. H. Lines, who has studied the fortresses on the Malvern Hills for many years, and who had kindly undertaken to be the guide during the day. On reaching Malvern Wells, a pleasant stroll up a slow ascent brought the party to Little Malvern, where the fine old church, the broken fragment of a once noble priory, with its remains of Early Norman capitals at the base of its great tower, with its old, worn, heraldic tiles, its mutilated stall seats, its double Eychoscope, its scraps of early glass, its richly carved remnants of the old rood screen, its traces of a noble timber roof, peeping through the plaster of a modern ceiling—all excited extreme interest, and were left with regret. The grounds of the adjacent residence, Berington Court, were thrown open to the visitors. From this pleasant retreat the party proceeded to the woods, and scrambled up a long steep path into a turnpike road, and, finally, the British Camp Inn was reached, and a cold collation was spread. Mr. Lines led the way up the hill side towards the summit of the Herefordshire Beacon, pausing on the way to point out the magnificent views which every turn disclosed, and then, when the first of the ancient entrenchments had been reached, explaining the structure of this ancient and formidable stronghold of our ancestors nearly two thousand years ago. He showed, as the entry was made by a slow and winding ascent: how one of the first gates was reached; how the long lines of circumvallation extended all round the hill; how here one huge *vallum* had a deep wide *fosse* beneath it, and a huge *vallum* again as a further defence; how these lines were beyond all doubt artificial, and for military and defensive purposes only; how here one break marked a mere sally port, and another showed where that steep winding way led down to one of the three primæval springs, and whence the citadel derived its supplies, for there was no well, no spring within its lines; how another break marked the opening of a more open and regular road, the chariot road in fact, whereby an old *biga* might ascend; how in another place a huge area, well defended by an earthwork, showed where one of the great gates and entrances to the fortress had been made; how this great gate was so constructed on the hill-side that besiegers must approach with their right arms to the defenders, and their left, or shield arms, useless; how all along the lines were traces of minor works, where huts and pits had formed places of shelter and defence; how after all precautions the place had evidently been taken by assault on the western side, where both lines of defence had been broken by a furious charge up the steep hill-side, and a garrison driven from height to height; how here were traces of old houses, there marks of places of public assembly; and how every feature of the fortress had its counterpart, in Roman castrametation, too. After a scramble up the steep, soft velvet turf, and sometimes a slide down slopes too steep to walk on, the party lounged on the sides af one of the trenches, as a cover against the cold but pleasant bracing breeze, and Mr. Lines read an interesting paper, and illustrated his remarks by several excellent plans, in which full details were given.

Durham and Northumberland Architectural and Archæological Society.—The fourth meeting of this society for the present season was fixed to commence yesterday (Thursday), when an excursion was to be made to Coxwold Church, which contains several very fine monuments of the Fauconberg family. After completing the examination of this mediæval edifice, the party was to proceed to Byland Abbey, which was to be inspected under the guidance of the Rev. J. F. Hodgson, of Staindrop. The archæologists were then to be conveyed to Rievaulx Abbey, the day's excursion terminating at Helmsley. To-day (Friday), the members will visit the church and the ruins of Helmsley Castle, and (if time permits) Duncombe Park, the seat of Lord Faversham. Gilling Church will also be examined, as also The Castle, the seat of Mr. G. Fairfax.

London and Middlesex Archæological Society.—A general meeting of this society was held at the School-room, Monken Hadley, on Tuesday, the 13th inst., at 11·30, when papers were read as follows:—"The Ancient Topography of Barnet," by Mr. W. H. Black, F.S.A.; "Barnet and its Neighbourhood," by Mr. T. F. Peacock. The society then proceeded to Monken Hadley Church, where a paper was read by the Rev. F. C. Cass; thence to South Mims Church, when Mr. E. Wright gave an account of the church and parish; returning to Hadley, thence to Chipping Barnet, visiting the church and other objects of interest in the town.

Sussex Archæological Society.—At the next quarterly meeting of the general committee of the Sussex Archæological Society, to be held on the 22nd inst., the fixture will be made for the autumn excursion.

Wiltshire Archæological Society. — The seventeenth annual meeting of the Wiltshire Archæological and Natural History Society commenced on Wednesday last at Wilton. We hope to give some particulars of the meeting in our next.

Building Intelligence.

CHURCHES AND CHAPELS.

Bacup.—On Wednesday week the new Ebenezer Baptist Chapel at Bacup was formally opened. The cost of the building, which will seat 1,000 persons, has been £6,000. Mr. Horsfield, of Halifax, was the architect, and the work was executed by the following contractors:—Messrs. Parkinson & Swift, masons; Mr. Daniel Shilton, joiner; Mr. W. Bulcock, plumber; Mr. J. Pilling, plasterer; Mr. T. Rushton, slater; and Mr. Holmes, painter.

Bolton.—On Saturday afternoon, the foundation stone of a Wesleyan School-Chapel was laid in Fern-street, Pike's-lane, Bolton. The style of architecture will be the Continental Gothic. Above the ground line the walls will be of brick. The front and part of the back elevations will be faced with patent pressed red bricks, relieved with blue brick bands, strings, &c., and stone dressings, consisting of base course, sills, and weatherings to buttresses, &c. The internal dimensions of the large room will be 51ft. by 39ft. 7in., and 26ft. high to the ceiling. The roof will be of the collar-beam form of construction, with curved ribs. Altogether there will be accommodation for about 500 persons. The architect is Mr. Thomas Ormrod, of Nelson-square, and the contractor Mr. William Donaldson, of Bolton.

Chatham —Mr. Alderman Naylar, builder, of Rochester, has completed a very fine synagogue, at a cost of over £6,000. The architect is Mr. H. H. Collins, of London. The gas standards on the sanctuary are by Messrs. Brawn & Downing, of Birmingham.

Coventry. — The new Jewish Synagogue, situate at the junction of Barras-lane and Gloucester-street, Coventry, was formally consecrated by the Chief Rabbi, the Rev. Dr. Adler, on Tuesday week. The style of architecture is a free adaptation of Romanesque, and the façade is of brick, with Bath stone dressings. A flight of steps from Barras-lane leads to a vestibule, from which access is had to the interior of the synagogue. The walls are pierced with three two-light windows, filled in with leaded lights. At the east end the sanctuary is recessed, and fitted with doors and framing. The roof is open-timbered, stained and varnished. The ladies' gallery is at the west end, and with it are connected a lavatory, retiring room, &c. Adjoining the synagogue are a large school or committee-room, with bath-room, and a dwelling-house. The whole has been erected from the designs of Mr. Thomas Naden, architect, of Birmingham, by Messrs. Hallam & Co., builders, Coventry. The stained glass is by Mr. Holland, of Warwick.

Dorking.—A handsome carved oak screen has just been erected at the entrance of the chancel of S. Martin's Church, Dorking, from plans by Mr. Woodyer, of Graffham, the architect of the new chancel. The screen is surmounted by a massive cross elaborately carved.

Eastbourne.—A tower and south aisle have just been added to Christ Church, Eastbourne. The church was designed by Mr. Benjamin Ferrey, and was intended to comprise nave, chancel, side aisles, and tower; the nave alone, however, was built (in 1858), for want of funds. The south aisle and tower now erected have cost £1,750. The aisle is lighted by three windows, and affords 160 additional sittings. The tower is erected at the north-west angle, and has, at one corner, an octagonal turret. It is hoped soon to erect the chancel and north aisle, thus completing Mr. Ferrey's design. Mr. J. Peerless, of Eastbourne, was the contractor employed.

Eastbourne.—The tower of S. Saviour's Church is now in course of erection. The church (of which we gave an illustration in the Building News for July 15 last) has been designed by Mr. G. E. Street, A.R.A., and Mr. J. Peerless, of Eastbourne, is the builder. The tower will be square, with a circular turret at the angle adjoining the aisle, and headed by an octagonal spire some 75ft. in height. There will be twelve lights in the spire, and the total height of the structure will be 165ft. The tower, like the church, will be of red brick, with Bath-stone dressings.

Forres.—On Thursday week the foundation stone of a new church for the United Presbyterian congregation of Forres was laid. The church when finished will be 80ft. by 62ft, and the ceiling 30ft. above the floor level. The ground plan is in the form of nave and transepts, with side aisles, and without galleries. The style is florid Gothic. It will be seated for about 600 persons, but 100 more can be accommodated in the aisles when necessary. The architect is Mr John Rhind, Inverness. The cost of the church will exceed £2,400.

Glastonbury.—The ancient parish church of S. Mary the Virgin, Meare, for centuries one of the cells of the famous Abbey of Glastonbury, is now in course of careful restoration, under the direction of the Rev. J. Baddeley, vicar. The large square high pews and the various galleries (one of the latter blocking up a beautiful arch of the date 1322) have been removed. The church will probably be re-opened on the 21st inst. by the bishop of the diocese. The village of Meare possesses many antiquities, including the wayside cross, the monkery (now a farmhouse), the fish-house, the porter's hatch, &c.

Everton.—On Monday afternoon the memorial stone of a new Congregational Chapel was laid at Everton. The style adopted is the Geometrical Gothic of the thirteenth century. The exterior is faced with the red sandstone from the neighbourhood, relieved with dressings of Stourton stone to windows, doorways, plinths, and strings. At the north-west corner of the chapel is a tower in two stages, in which is an entrance from the side street to the body of the chapel as well as to the gallery. The tower is surmounted by an octagonal lantern and spire, rising to the height of 120ft. from the ground. The roof of the chapel is of a novel construction, formed of open laminated arched ribs, springing from stone corbels, and spanning the whole width of the chapel, thus obviating the necessity for piers and arches. On a level with the chapel floor, and communicating direct with the chapel, is the school-room, capable of accommodating 300 children. The total cost including tower, spire, and boundary walls, will be about £4,000. The whole of the works are being carried out from the design and under the superintendence of Messrs. Hill & Swann, architects, Leeds and Sheffield. The contractor is Mr. Cheetham, joiner and builder, Watmough-street, Everton.

Halifax.—On Wednesday week a new Congregational Chapel was opened at Ripponden, near Halifax. The church and schools form a handsome pile of Gothic architecture. The chapel consists of nave and side aisle, 59ft. long, and 38ft. wide. A spirelet, on the east side, rises to a height of 80ft., and under it is the principal entrance. Adjoining the chapel, at the south end, is the school-room, 45ft. long by 27ft. wide. Class rooms are attached. Under the chapel, in the basement, are a kitchen, coal cellar, and warming apparatus. The total accommodation in the chapel is for 400, and in the school for 300 persons. The seats are open and of pitch pine, stained and varnished. The pulpit and organ screen are of the same material. The ceiling is toned a warm yellow, the walls stained a chocolate, and the arches are decorated with a groundwork of ochre, with cinque-foil ornaments stencilled in vermilion, and a dark red string course.

Liverpool.—On Wednesday week Mr. Spurgeon laid the foundation stone of the new Toxteth Tabernacle at Liverpool. The chapel is designed in the Italian style, plainly treated. The cost of the land and building amounts to about £6,000. The architect is Mr. W. I. Mason, the contractors being Messrs. Haigh and Co.

Southborough.—The memorial stones of a new Wesleyan Chapel at Southborough were laid on Wednesday week. Messrs. Cattermole and Eade are the architects, and Mr. Aaron Brown is the builder. With respect to the inscription on one of the memorial stones the schoolmaster would seem to have been abroad, as the word "architects" is cut into the stone "archietects."

Stratford St. Andrew.—The ancient parish church of Stratford S. Andrew, on the high road between Ipswich and Lowestoft, was re-opened on Friday last after restoration, under the direction of Mr. Frederick Peck, architect, of Furnival's Inn, London, whose services were given gratuitously. A new vestry has been added at the north-east corner of the chancel. Mr. George Carter, of Saxmundham, was the contractor for the works.

BUILDINGS.

Lytham.—The foundation stone of a new cottage hospital for Lytham was laid on Friday week. The style adopted is Early English, and the material used will be cobble-stone, with red brick and Bath-stone dressings. The hospital will consist of a central building and two wings, the centre being two stories and the wings one story high. The main frontage will be 79ft. 3in. in length, and the distance from back to front of the central building will be 56ft. 4in. Mr. Littler, of Manchester, is the architect.

The Globe Theatre.—We hear that the Globe Theatre, in Newcastle-street, Strand, is undergoing a complete transformation during the recess, and many of its failings are being remedied. The draughts, which were so unpleasant to the frequenters of this theatre, have been totally done away with by the diverting of the entrances. The whole face of the interior has been altered, and the ventilation and powers of accommodation in front greatly improved, under the management of Mr. Walter Emden, architect, son of the well-known manager of the same name, formerly of the Olympic Theatre. The improvements and decorations are being executed by the well-known theatrical decorator, Mr. E. W. Bradwell, of Great Portland-street.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

To Our Readers.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

Letters relating to advertisements and the ordinary business of the Paper should be addressed to the EDITOR, 31, TAVISTOCK STREET, COVENT GARDEN, W.C.

Advertisements for the current week must reach the office not later than 5 p.m on Thursday.

Received.—A., G. H., R. H., J. S., D. J. W., D. & E., W. H. M., E. T. W., J. F., A & G., J. H. A., S. W. T., J. N., J. B., R. W. T., J. E. F., M. A., J. P. S., W. B., A. R., J. B. & Co., F. P., J. D. H.

J. H. H.—Sketch not good enough. Returned.

J. C., Swaffham.—Trübner and Co., Paternoster-row, London. We intend to reproduce the whole of "Hand Railing" in the Building News.

D. Grant.—Yes.

F. G. Green.—Sketch received.

W. Z. Z.—It will depend on the quality of the sketch.

Thos. Garratt.—Your title for "Building News Sketch Book" is too full of work to admit of reduction by the photo-litho. process with advantage. Thanks, however.

Erratum.—In our description of the New Model Lodging House for Working Men, at Birmingham, we described it as "A Model Dwelling for Families." The architect's name also is Mr. Douglas Williams, and not *James* Williams.

◆

Correspondence.

WINKLEIGH PARISH CHURCH.

(*To the Editor of the* Building News.)

Sir,—Having noticed in your last issue the reopening of Winkleigh parish church, and a description of the restoration and re-building of chancel (from designs of Mr. Christian), being in the neighbourhood, and taking a deep interest in church "restoration," I took the earliest opportunity of seeing these "restorations." I will enumerate a few of the *embellishments* or *improvements* (or call them what you like). The interior of chancel walls are stuccoed—a kind of toothing cut from stucco to make the quoins round windows, &c.; the stonework, which is of rubble-walling for jambs and splays, is picked out and pointed with black mortar; where any old masonry exists, and required a piece of stone to be let in to match the old work, this is made out with cement or coloured mortar—granite columns not excepted; nor yet even the ogee (head) arch of piscina escaping the tar-brush, *i. e.*, repaired in cement. The joints of stonework in window-jambs and filling-in arches of nave, tower-arch jambs and walls, although these are of real good solid masonry, have been stopped in with mortar to imitate the stonework, and then a narrow joint of white mortar laid on in straight strips, just the kind of thing one sees in little shop-fronts where they wish to imitate brickwork tuck-pointed, that its occupiers like to look showy. Now much has been said of restoration, which oftentimes nearer approaches a desecration, but anything more gloomy than the chancel of this church, or showy than the nave and tower, I have not as yet seen. Had it been left to some local rough-waller, or the builder's own taste, this is just the kind of thing we should have expected to have found—this churchwarden architecture; but from one of our own leviathan architects (what may we expect from the young profession ?) to see granite columns and masonry patched up with cement and coloured mortar was something more than I was prepared for, and I need scarcely say I returned thoroughly—(disgusted, I was going to say)—disappointed.—I am, &c., J. P.

CROSS AT LLANTWIT CHURCH.

Sir,—The sketch of the cross at Llantwit Major, published a short time ago in your journal, was accurately reduced from a rubbing made by myself last year, and was intended more to show the peculiar ornamentation than the inscription, which is in Latin; but the exact import of which, however, I am unable to determine. The four spandrel pieces of ornament referred to by Mr. D. J. Ebbetts certainly *are* recessed, as I remember having some difficulty in taking the rubbing, owing to the thin paper breaking through at the edges of these portions. Should any one further doubt the correctness of my drawing, I would strongly advise them to visit Llantwit, which is about 10 miles from Cowbridge, and see for themselves. They will find a great deal besides of interest to repay them for the visit; a fine old church and picturesque village. I forward the rubbing for comparison with the drawing. For further information on the subject of these inscribed stones, I refer your readers to the "Archæologia Cambrensis," where they will find the subject discussed at length. Apologising for trespassing on your space—I am, Sir, &c.,

John Romilly Allen.

75, Huskisson-street, Liverpool, Sept. 9.

TOWN CHURCHES.

Sir—I read with much interest a series of papers that appeared last year in the Building News, entitled "Churches for Congregations," in which the writer (Mr. Cubitt) deprecates the slavish adherence to the stereotyped arrangement of nave and two aisles, which prevails in nearly all our designs for modern churches, and gives plans of various Continental and Eastern churches, which suggest arrangements far better adapted to the great modern requirement of facility for hearing and seeing. I have long felt the inconvenience and obstruction caused by pillars and arches, and in a paper on "Town Churches," read by me before the Exeter Diocesan Architectural Society in 1868, I suggested an adaptation of the peculiar vault of the churches in Jersey as a mode of roofing wide unbroken areas that might be turned to useful account. I have received the sanction of the committee of the society to send you a copy of this paper for publication if you think proper, either *in extenso*, or with reference only to that portion of it which bears on this subject, thinking that, as a sort of sequel to the former articles, it may prove interesting to some of your readers.—I am, &c.,

Pearson B. Hayward, Architect.

The Close, Exeter, Sept. 12.

[A portion of the paper is given elsewhere; the remainder will appear next week.—Ed. B. N.]

BUILDINGS IN THE ISLE OF THANET.

Sir,—Having but recently returned from a short stay in Broadstairs, I have been the more gratified in reading your interesting articles headed respectively "Sundry Buildings in the Isle of Thanet," and "Sundry Works in the Isle of Thanet."

Referring to the domestic architecture of this neighbourhood, you deservedly draw especial attention to a remarkable "timber-built manor house," situate in Smock-street, and known, I believe, as Mrs. Sackett's cottage. Upon inquiry at the house, I was informed by one of its inmates that is believed to have been built 400 years, whereas you fix its date as the "latter part of the sixteenth century." It would be interesting to learn more of this building, and I hope that some one in possession of accurate information respecting it will communicate the same to the Building News.

The cottage at Dumpton is an Elizabethan one, and well worthy of notice. On the occasion of my visit, the cottager obligingly showed me over it, and in the low-pitched front room the curious may see a small indent on the edge of one of the joists, where, to use the cottager's words, "a kinsman of mine," many years ago, struck his head with fearful violence, at a party, through jumping too high.

A ramble through S. Peter's churchyard will repay the visitor. There are some curious epitaphs to be met with here, as, for instance, that "In memory of Mr. Richard Joy (called the Kentish Samson)," who died in 1742, aged 67 years.

Very characteristic epitaphs record the deaths of two seamen. One is to the memory of William Soal, who died in 1783, aged 53 years:—

Through raging seas I have crossed the main,
  Abroad both far and near,
But by a sudden change of death
  My corpse lies easy here.

And the other to John Oldfield, who died in 1790, aged 27 years:—

Though boisterous waves and stormy winds
  Have tossed me to and fro,
Yet by the force of God's decree
  I harbour here below.
Here at an anchor I do ride
  With many of our fleet,
Yet once again we shall set sail
  Our admiral Christ to meet."

Wishing with you, of the hideous modern galleried church at Broadstairs, that a friendly storm may put an end to its melancholy existence,—I am, &c. W. A. B.

Intercommunication.

◆

QUESTIONS.

[1944] STRAW BARN.—I should be much obliged if your readers would inform me what is the maximum accommodation requisite in a straw barn for every acre of wheat grown where none is "stacked" or otherwise disposed of.—J. J. T.

[1945] BATHS.—Can any of your readers tell me where to get a No. 1 Rufford's bath? If the people who make these baths were to advertise a little their baths would get better known.—J. Hutchinson.

[1946] GRINDING MONEY.—I am summoned by several workmen for grinding money. Will some reader kindly tell me through your valuable journal what is the custom under the "hour" system; and if the question has been legally decided?—Defence.

[1947] STRENGTH OF CANTILEVERS.—Will some of your numerous scientific correspondents tell me how to calculate the safe load of the cantilever given in the sketch? The elevation is shown in fig. 1, and the half cross-section in fig. 2. The flanges, top and bottom, are composed of two angle irons, 3in. × 3in. × ⅜in. thick, and the bars are all 3in. × ½in., and are inclined to the flanges at an angle of sixty degrees. The cantilevers are placed 6ft. apart, and the platform, which is intended for foot traffic only, is of planking 4in. thick. Is the cantilever strong enough to support its proper load? An answer will greatly oblige me.—A Young Builder.

FIG. 1

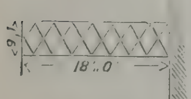
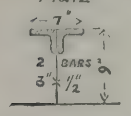


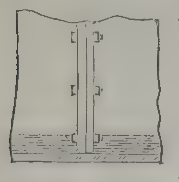
FIG. 2



[19481] LAYING OUT CURVES.—I should be obliged to any one who would inform me of the title and the publisher of a good practical work on the laying out of curves generally, but particularly with reference to railways. I do not mean the method of "offsets," which is described in all surveying treatises, but those in which the theodolite is employed together with the chain.—Alexis.

[1949] AREAS OF CIRCLES.—I constantly see in text books that the area of a circle is obtained by the following rule:—"Square the diameter, and multiply the result by the number 0·7854. The product will be the area of the circle in square inches, or square feet according to the value given to the diameter." Will some one inform me how this number 0·7854 is obtained, and the corresponding result proved to be the area of the circle?—Puzzled.

[1950] CAST-IRON TANKS.—I am putting up a new cast-iron tank, but cannot get the joints to keep watertight. What would be the best sort of cement to employ? I enclose a drawing of the joint. They are all planed and bolted together by bolts ¾in. in diameter. Is this sufficient? Any information from a practical man who has had to do with the putting up of water tanks would be of great service, as I am at a complete standstill for water. —J. P.



[1951] BASE LINES.—Is it necessary in measuring long base lines in surveying to allow for the expansion and contraction of the chain? I am now engaged on the survey of a large parish, and my longest base line is over five miles in length, and I think some allowance ought to be made. If so, I should be glad to know how it is to be done? —Assistant.

[1952] HARBOURS AND DOCKS.—Will any one recommend me a really good work on harbours and docks, with plates and working drawings with dimensions on them that will serve as precedents?—Inquirer.

[1953] FIRE-PROOF FLOORS.—I should be much obliged if any of your contributors would let me know what a "Dennett arch" is. I hear it mentioned very often in connection with fire-proof structures. A sketch would be very useful to many others besides myself.—L. L. M.

[1954] ARCHITECTS' CHARGES.—Is the objection to the payment of £2 10s. per cent. for measuring extras and deductions, over and above the usual commission of 5 per cent., one that can be legally sustained?—F.

REPLIES.

[1931] MEASURING BUILDERS' WORK.—There is a capital little work on this subject which gives all particulars about measuring and estimating the work of bricklayers, masons, plasterers, plumbers, painters, carpenters, joiners, and other trades, by A. C. Beaton, architect and surveyor. It forms No. 156 of Weale's series, and appears to be just the thing your correspondent requires.—Calculator.

[1933] WHITWORTH SCHOLARSHIPS.—The information "I." wants will be found in a paragraph of the "Office Table," in the Building News of last week.—A Reader.

[1934] MALT HOUSE FLOORS.—In reply to "Pecksniff" I beg to say I have put up some very excellent floors of the following materials. The lower floor is properly levelled, and the upper floors are laid with mill sawn boards, upon which is laid 3in. of moderately coarse Portland cement concrete, then the whole surface is covered with shingle and Portland in the proportion of three of shingle to one of cement, about 2in. thick, and floated off to a smooth surface with Portland cement and sand in equal proportions, 1in. thick.—G. M., A.A.

[1936] ROAD MAKING.—Let "W. P. B.," get "Road Making and Maintenance of Macadamised Roads," by Field Marshal Sir John Burgoyne. Virtue and Co., 26, Ivy-lane, London.—S. P. L.

[1937] MEASURING HILLY GROUND.—All sloping land in surveys is supposed to be reduced to horizontal measurement. This measurement is based on the assumption that plants will not grow closer together on level land than upon sloping. For the particulars respecting the manner of conducting the survey and measurements see the article "Measurement of Hills," under the head of "The Surveyor," in the Building News, of May 28, 1869. —A Surveyor.

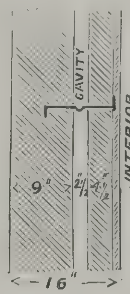
[1938] TURKISH BATHS.—John Scott would obtain good practical information on the construction of the above from the architects of the Brighton Turkish Bath. The architects were Messrs. Goulty and Gibbins, of Torrington-square, London, and 12, Union-street, Brighton.—M. B. A.

[1938] TURKISH BATHS.—In reply to "John Scott" Messrs. Whittaker and Constantine, of 3, Bullock-street, Bolton-le-Moors, prepare details and advise as to the construction of Turkish baths. The Turkish baths in Euston-road and at King's Cross were erected under their superintendence.—F. R. B.

[1938] TURKISH BATHS.—In reply to Question 1938, I could supply you with details, having carried out Turkish baths on a large scale.—Address, F. P., Post Office, Hawkhurst, Kent.

[1941] ORNAMENTAL INLAY.—Colophony *(ko-lo-fo-ni), n.* The dark coloured resin obtained from the distillation of turpentine: so called from the *colophon* in Ionia, whence it was first brought. It is a mixture of two different resins, named the sylvic and pinic acids.—F.

[1943] WALL BUILDING.—The 9in. thickness is usually placed outside. The cramps or ties should be of galvanized iron, about ¾in. by three-sixteenths placed thus: not less than two to every superficial yard of walling. —F.



◆

LEGAL INTELLIGENCE.

Compensation.—Section 34 of the London City Improvement Act, 1847, gives power to the Corporation to obtain possession of premises compulsorily by giving a six months' notice, provided that no such possession shall be delivered up until payment or deposit of purchase or compensation money, as directed by the Lands Clauses Consolidation Act, 1845. The Holborn Valley Improvement Act, 1864, incorporates section 34 of the former Act. Plaintiff, who was a tenant from year to year, whose tenancy commenced at Christmas, received, on November 29, 1865, a six months' notice from the corporation of their intention to take his premises under the latter Act. The corporation obtained an assignment of the reversion from plaintiff's landlord on January 30, 1867. In February, 1867, the purchasers went before an alderman under the Lands Clauses Consolidation Act, to assess the compensation due to plaintiff, when the corporation contended that plaintiff was not entitled to compensation, not having been required to give up possession of the premises before the expiration of his interest therein, within the meaning of section 121 of the Lands Clauses Consolidation Act. The alderman took this view, and decided that no compensation was due. Plaintiff was permitted to continue in possession till March 16, 1867, but on that day the Corporation took possession of the premises, refusing to make any payment or deposit as compensation to the plaintiff. Plaintiff then brought an action for trespass against the Corporation. Held, affirming the decision of the Court of Exchequer, that the defendants could not justify taking the premises without compensation to plaintiff.—"Reg. *v.* the Southampton Railway Company," discussed and distinguished; "Cranwell *v.* the Mayor, &c., of the City of London," 39 *Law J. Rep.* (Exch. Ch.), Exch. 193.—*Law Journal.*

◆

WATER SUPPLY AND SANITARY MATTERS.

Barnard Castle.—On Tuesday week an inquiry into the water supply of Barnard Castle, authorised by the Home Secretary, was held before Mr. Morgan, one of Her Majesty's inspectors, when evidence was given in support of and against the formation of a new reservoir. Barnard Castle has undoubtedly the advantage of a particularly healthy situation, and to this fact is probably to be attributed the fact that out of a population of 4,500, there have only been 120 deaths in eighteen months. This statement was put forth by the Registrar as a proof that the supply of water to the town has not been so deficient as to injure the health of the inhabitants. On the other hand, it is affirmed that for several hours of the day in droughty weather it is impossible to obtain water under the present arrangements.

Nuneaton.—A meeting of the Nuneaton Local Board of Health was held on Tuesday week, at the Town-hall. A short time ago a resolution was passed to the effect that the sewage of the town be disposed of by the A B C system. The A B C company have since been communicated with, and requested to prepare plans of the necessary works, and the clerk now read a letter, intimating that they would be sent on the following day. A discussion now ensued upon the patented scheme of treating town sewage, by Dr. Anderson. It seemed that, on Saturday week, some experiments were made by that gentleman at Coventry, in the presence of several members of the Nuneaton Board, and, judging from the results of those experiments, it was thought that the scheme of Dr. Anderson was preferable to that of the A B C Company, for although almost similar, it is described as cheaper and more easily managed. The estimate for erecting works necessary for carrying out Dr. Anderson's scheme is £1,200, while that of the A B C Company is £2,500. The Board then agreed to adjourn the meeting for ten days for the purpose of considering both systems, and deciding on the one which would, in their opinion, be the best and most economical.

Thetford.—At a recent meeting of the Thetford Local Board the official communications to the Board from the Privy Council and the Secretary of State relative to sanitary matters engaged the attention of the members. It was resolved that the Board, after stating their case, should ask the authorities in London to send down their own engineer to confer with the Board with respect to what was necessary to be done to meet the requirements of the Government.

The Purification of the Thames.—A deputation from the Twickenham Local Board waited on the Thames Conservancy Board at their office on Tower-hill, on Monday, for the purpose of ascertaining on what condition the water, when purified from sewage, would be allowed to flow into the river. The chairman reminded the deputation that the local board had already by letter inquired of the Conservators whether effluent water, after treatment by Mr. Austin's process, and by the A B C process, would be allowed to run into the Thames. The Conservancy Board had fully considered these questions, and determined on a standard of purity for effluent sewage water. The local board would receive a letter in which the standard would be defined. With reference to an embankment, the plan proposed would be duly considered upon a formal application from the local board. Works for the utilisation of sewage on the banks of the Thames would not be objected to if above high-water mark. But with reference to all schemes for the treatment and disposal of sewage, the Conservators had nothing whatever to do with them. Their attention was confined to the purity of the water flowing into the river. How that was to be affected in the treatment of sewage they must leave to the local authorities.

◆

STAINED GLASS.

Gloucester Cathedral Restoration.—Three painted glass windows have just been inserted in S. Paul's Chapel, the restoration of which is being effected at the cost of the Earl of Ellenborough. They are the work of Messrs. Burlison and Grylls, of London, and consist each of three lights, partially obscured by the reredos. In the centre window is a representation of the Lord seated in majesty. In the upper lights are six angels bearing scrolls, inscribed "Te Deum Laudamus." The side windows, which are an expansion of the central subject, have each ten angels arranged in four tiers, and playing upon various stringed instruments, fifes, and a small organ.

Sheffield.—A large stained glass window has just been erected in the parish church, Sheffield, in memory of the late Mr. E. Unwin. The subject is "The Conflict of Light and Darkness." Messrs. Camm, of Smethwick, executed the work.

Southwold.—The new stained glass window, in memory of the late Miss Sheriffe, has just been completed in the east end of the church. The window consists of four lights which are filled with eight representations of passages in the life of our Lord, viz., in the lower part "The Annunciation," "The Nativity," "The Baptism," and "The Temptation," and above these "The Agony in the Garden," "The Crucifixion," "The Burial," and "The Resurrection." Above these, in the lower part of the tracery, are eight floral devices with scrolls, bearing mottoes. Above these are figures of angels playing musical instruments, and in the four quatrefoils at the top of the window are the emblems of the Trinity, the Dove, the Lamb, and the initials I H S. The figure of S. Edmund, (to whom the church is dedicated) appears in a small compartment in the centre of the window. The work has been designed and executed by Messrs. Ward and Hughes, of London.

Thetford.—The Perpendicular east window at S. Peter's Church, Thetford, has just been filled with stained glass by Messrs. Ward and Hughes, of London. The upper part of the window is filled with figure painting, the four lower compartments with simple painted quarries.

◆

STATUES, MEMORIALS, ETC.

Sir Rowland Hill.—At the Birmingham Exchange, on Monday, the ceremony took place of the presenting to the members and to the public of a fine marble statue of the late Sir Rowland Hill, who was a native of that town. The statue is of Carrara marble, 6ft. 9in. high, and placed on a pedestal 4ft. in height. The sculptor is Mr. Peter Hollins, of Birmingham.

The late Bishop of Carlisle.—A monument is about to be placed in Carlisle Cathedral, at a cost of £800, to the memory of the late Bishop of the diocese, Dr. Waldegrave, the joint design of Mr. Adams, the sculptor, and Mr. T. H. Watson, the architect. The figure, in statuary marble, will be recumbent, with rich canopied superstructure and solid foliated brass standards.

Our Office Table.

◆

Death of Mr. Robert Wade, Town Surveyor of Carmarthen.—On Sunday week, after prolonged suffering, Mr. Robert Wade, the Town Surveyor of Carmarthen, died at his residence in Temple Gardens, after having served the Corporation for nearly fourteen years. To show its sense of the value of his services, the Town Council some time ago appointed Mr. Lukin to act temporarily for him until he should be able to resume his duties, but that time never came. Mr. Wade died at the age of 48. His funeral was attended by the mayor and corporation.

A Liberal Local Board.—An advertisement published in a local paper by the Lenton Local Board is really worthy the attention of some of our readers. The Board, whose offices are at Basford, will meet on the 5th day of October, at half-past six o'clock in the evening, to elect a collector of the general district rates, who will also have to act as surveyor and inspector of nuisances. The salary is £25 per annum; and the person appointed will have to find security for the due performance of his duties! The services of a surveyor, rate-collector, and inspector of nuisances appear to be valued at rather less than those of a farm-labourer.

The Maps of the Prussian Army.—A correspondent of the *Siecle* thus describes the excellent maps which all the officers of the Prussian army possess:—They are made in the following manner: Maps giving the minutest details are drawn quite roughly on immense panels. Everything is set down on them. The trees, their species, their height, their thickness, the hedges, the toll-gates, the walls of enclosure, the depth of the smallest ditches—all these things are indicated by fainter or darker colours; the different plantations, even the direction of the furrows of the fields, are shown. The scale applies to everything; to roads as well as fields, to lanes, and to the smallest watercourses. The villages are not only marked down, but planned out, with their streets, houses, public wells, factories, &c. When these panels are finished they are photographed on surfaces 22 centimetres high and 30 broad. Then long pieces of linen, rather more than a yard and a half long, are prepared, and the photographs are glued on them in such a manner that they can fold up like the illustrated alphabets sold for the use of children. The whole is bound, and takes but little room in a knapsack, or even in the pocket.

Presentation of a Silver Medal by the Turners' Company.—On Saturday a special court of the Assistants of the Company of Turners was held in the Long Parlour at the Mansion House, when the freedom of the company, together with a silver medal, was presented to Mr. Alfred Madden (an apprentice with Mr. Wills, Tabernacle-square), for the best workmanship in turnery. As this is the first livery which has taken upon itself thus to award worthy craftsmen, considerable interest was manifested on the occasion. The Lord Mayor was in the chair, and amongst those present were Mr. Dawson, the master; Mr. Young, upper warden; Mr. Potter, Mr. Jones, Professor Tennant, Mr. Gregory (late President of the Institute of Civil Engineers), and Mr. C. J. Shirreff, clerk. The medal was of solid silver, and was in itself a work of art, not being, as is usual, cast or moulded, but carved in a very artistic style. The obverse showed the arms of the company, with the motto, "Thy faith I obtain;" the reverse bearing the following inscription, which was also beautifully engrossed on parchment and handed to the fortunate competitor:—"Presented by the Turners' Company, of London, together with the freedom of the company, to Alfred Madden, for superiority in turnery in the annual competition. September 10, 1870."

Technical Education in Mile-End.—For some time past efforts have been made to have science classes opened and established in this district in connexion with the Science and Art Department of the South Kensington Museum. These efforts have been backed up by Sir Thomas Fowell Buxton, the Rev. Mr. Bardsley, and other gentlemen interested in the spread of education throughout the district; and arrangements having been at last completed for the establishment of such classes, a meeting was held on Thursday week, at the rooms of the East London Branch of the Young Men's Church of England Society, for the purpose of inaugurating them. The classes opened last night, and are to be continued on each Thursday evening during the season.

Society of Engineers.—Arrangements have been made for a visit of the members of the society to the works of the Croydon Irrigation and Farming Company, on Tuesday next, the 20th of September. Members and associates to meet at the Water-works, Surrey-street, Croydon, at 1 o'clock, p.m. Members and associates to pay their own expenses. Trains for West Croydon leave Victoria Station at 12·11 p.m., and London Bridge 12·15 p.m. Return tickets, 2s. 6d. first-class and 1s. 9d. second-class.

Tramways in Edinburgh.—Two schemes for laying down and working tramways in and around Edinburgh are at present under consideration. The first scheme for which the sanction of the civic body is asked provides for laying down about twelve miles of tramways, the principal portion of this being within the city, but extending to Portobello in one direction and to Murrayfield in the other. The line is to pass along Princes-street—the central street of the city—and from the east and west ends of this street lines will run southward to the suburbs of Newington and Morningside, a fourth line forming a junction between those places, and so completing a girdle round the city. A double line of rails is to be laid along this route, except in some of the outlying portions, where it is thought one line will suffice for the traffic. The second proposed line will connect the city with Leith, and will traverse the the principal streets of that port.

New Bridge at Malton.—The North Eastern Railway Company was last week engaged in sinking a coffer-dam on the Malton side of the River Derwent for the erection of a new iron girder bridge of two spans, the foundations of which, under the superintendence of Mr. John Baines, the engineer in charge, were put in on Wednesday week, the first iron pile in mid-stream having been driven the previous day. The excavation for the coffer-dam was carried down to the gravel, 2ft. 6in. below the deepest part of the river. This excavation, being situated about midway on the water-line of the supposed Roman town of Malton, the work was watched with care for relics. Singularly, not a single article referable to Roman date has turned up. In removing the river silt, which was done for about 10ft. in depth, vast numbers of horns of oxen, all apparently of the *Bos longifrons*, were thrown out. There was only one bone implement found, which, along with two gold pins, came from the very bottom. These are supposed to be British. At lesser depths a fine Anglo-Saxon or Mediæval silver buckle was found, and numerous nicks, handles, and bottoms of Mediæval pottery were found, and one socketed iron axe.

◆

Chips.

The old silver mace of the Dean and Chapter of Hereford, which dates probably from the time of Queen Elizabeth, and was sadly battered and defaced, has been very handsomely restored by Mr. Keith, of London, the ecclesiastical silversmith. The mace is of solid silver, but part of it has been gilded as before.

The new schools of S. Saviour's, Preston, have just been opened. The building is of stone, and the cost has been £1,240, exclusive of site.

Mr. Bates, late Chief Sanitary Inspector to the Corporation of Sheffield, is dead.

The new swimming bath at Preston is now completed, and will shortly be opened.

The plans by Mr. J. J. Bradshaw, architect, Bolton, for the new workhouse at Clitheroe, have been accepted.

A new Free Christian (Unitarian) Church will be opened at Barnard Castle on the 20th inst., by Sir John Bowring.

The foundation stone of a new Wesleyan Chapel was laid at Weymouth last week.

The Calvinistic Chapel at Colwinstone, Glamorganshire, has just been considerably altered and improved.

The Cardiff Fine Art Exhibition will probably remain open till the end of the present month.

The Council of the Royal Academy have resolved on placing a bust of the late Mr. Maclise in their hall. The commission for its execution has been intrusted to Mr. Edward Maclise.

Mr. Bass, M.P., has offered to erect and present to the town of Derby free public baths. The offer has been accepted by the Town Council, who have directed the Estates Committee to prepare plans and estimates of the baths for the approval of Mr. Bass.

Considerable progress has been made in the works for the new gardens at Buxton, for the Buxton Improvement Company, and the construction of the buildings, bridges, and fences will shortly be let by tender.

The death is announced of the Rev. S. Fox, M.A., of Derby, a well-known antiquary and Anglo-Saxon scholar.

A new building for the Salisbury Literary and Scientific Institution is about to be erected, from plans by Mr. Harding.

In anticipation of a great increase in the population of the ancient borough of Pontefract, in consequence of the opening out of a new coal field, considerable improvements are contemplated.

The extension works of the Weymouth and Portland Railway to the Breakwater will commence on the 1st proximo.

The Poor Law Board has consented to the purchase by the Rochdale Board of Guardians of a site for a new workhouse.

Friargate Chapel, Derby, has been re-opened after undergoing extensive alterations under the superintendence of Mr. E. Thompson, of London-road. The cost has been £370.

◆

Timber Trade Review.

◆

The sale held by public auction by Messrs. Churchill & Sim on the 14th inst. consisted of

50,000 Spruce deals, &c.
130,000 Quebec pine deals, &c.
50,000 Petersburg, Archangel, and Onega deals
60,000 Swedish deals and battens
50,000 Norway deals and battens
50,000 Finland deals and battens
10,000 Narva battens
170,000 Prepared flooring boards
2,000 Fresh Norway spars
200 Fathoms lathwood
20 Loads Swedish balks
150 Loads Quebec birch timber
90 Loads Quebec oak timber
450 Loads Quebec elm timber
&c., &c.,

for which the following prices were obtained:—

	Per	£ s.		£ .
Archangel 1st yellow	Petg. std.	12 0		
Do. 2nd do.	do.	8 15		
Bjorneborg yellow	do.	6 0		
Christiana 2nd yellow 3 × 9	120 12ft.	13 15		
Do. 2½ × 6½	do.	6 15		
Do. 1st white 3 × 9	do.	14 10		
Do. spars 4in. to 6in	foot run	1⅛d.		
Christinestadt yellow 3 × 11 × 9,	Petg. std.	6 15	to	8 15
Do. White	do.	7 0	,,	8 5
Dram 2nd yellow 2½ × 6½	120 12ft.	6 15		
Do. 3rd do.	do.	6 5	,,	6 15
Do. 4th do.	do.	6 15		
Do. 3rd white	do.	5 5	,,	5 10
Do. 4th do.	do.	5 5		
Fredrickstadt white	Petg. std.	5 0		
Fredrickshald 1st white 3 × 9	120 12ft.	14 10		
Gefle mixed yellow 4 × 12	Petg. std.	12 0		
Do. 4 × 9	do.	11 0		
Do. 2 × 9	do.	10 0		
Do. 3rd yellow 4 × 12	do.	11 0		
Do. 4 × 11	do.	10 0		
Do. 4 × 9	do.	10 0		
Do. 3 × 12	do.	10 5		
Do. 4 × 8	do.	9 5		
Do. 3 × 11	do.	10 5		
Do. 3 × 9	do.	9 10	,,	9 15
Do. 3 × 7	do.	9 0		
Do. 2½ × 9	do.	9 15		
Do. 2 × 9	do.	9 15		
Gothenburg mixed yellow	do.	9 10		
Do. 3rd do.	do.	7 10	,,	8 10
Do. 4th do.	do.	7 0	,,	7 15
Do. mixed white	do.	6 15		
Do. 3rd do.	do.	6 10		
Do. 4th do.	do.	5 15		
Holmstrand 3rd yellow 2½ × 6½	120 12ft.	5 15		
Hernosand mixed yellow	Petg. std.	8 15	,,	9 15
Do. 3rd do.	do.	9 0		
Matena 1st yellow pine	do.	14 15		
Do. 3rd do.	do.	8 5		
Do. 1st spruce (12ft.)	120 12 3 × 9	15 0	,,	1 10
Do. 2nd do. (12ft.)	do.	14 0		
Do. 3rd do	do.	13 5		
Narva crown yellow	Ptg. std.	8 10	,,	9 10
Do. 2nd do.	do.	8 0	,,	8 10
Petersburg 1st yellow 3 × 11	do.	13 5	,,	13 10
Do. 3 × 9	do.	12 10	,,	12 15
Do. 2nd yellow 3 × 11	do.	9 5	,,	10 0
Do. 3 × 9	do.	9 10		
Do. 1st white 3 × 11	do.	9 15		
Do. 3 × 9	do.	8 15	,,	9 5
Do 3 & 2½ × 7	do.	7 10		
Quebec 1st bright 12ft. 3 × 11	do.	19 10		
Do. 1st floated	do.	16 0		
Do. 1st dry floated	do.	16 0		
Do. 2nd bright	do.	13 5	,,	13 10
Do. 2nd dry floated	do.	12 0	,,	12 10
Do. 3rd bright	do.	8 15	,,	9 0
Do. 3rd dry floated	do.	9 0	,,	9 10
Do. 3rd floated	do.	9 0		
Do. 3rd spruce	120 12 3 × 9	12 10	,,	13 15
Do. 2nd do.	do.	14 5	,,	15 0
Do. 1st do.	do.	14 10	,,	17 10
Do. oak timber	load	6 10	,,	6 15
Do. hickory	do.	5 10		
Do. birch	do.	£3s. 2s. 6d.	to	£4
		£ s.		£ s.
Soderham mixed white	Petg. std.	7 0	to	9 0
Do. 3rd do,	do.	6 15	,,	7 10
Do. 4th do.	do.	6 15		

THE BUILDING NEWS.

LONDON, FRIDAY, SEPTEMBER 23, 1870.

COVENT GARDEN MARKET.

IT will be admitted on all hands that the markets of a great city are among the most important of its internal arrangements, and being so they ought to obtain the best consideration from its municipal government. The supply of food to a population is the first necessity, and to accommodate the mutual interests of the producer and the consumer is a matter of convenience and economy to all. Whatever adds to the cost of carriage is, like a tax upon production, a burden upon every inhabitant, but it affects the poorer classes most heavily. It is therefore desirable in this, as in all other departments of public management, to give the largest amount of accommodation with the least possible expenditure. In looking over the markets of the Metropolis, we have been surprised to observe how much these simple and obvious principles have been overlooked by the Boards and vestries. At present we will take a glance at Covent Garden Market. It is known as one of the great markets of London, and as one of the places that strangers first visit, attracted by the fame of its avenue, lined with shops and stalls, exhibiting the first and finest fruits and flowers of each season. Few persons reflect upon the immense business that is transacted upon every market-day, and, in fact, to obtain any adequate idea of it the market should be visited from twelve to four o'clock upon a market morning. It will be then seen that the great bulk of the sales are effected long before the citizens of London are out of bed, but the observer will be puzzled to know how the large trade is effected in so confined a space. There will be seen a great amount of crushing, and much confusion, arising from this cause, and it is creditable to those who come to it regularly as sellers and as purchasers that the difficulties are not much greater. Covent Garden Market and all the streets leading from it are locked up and utterly impassable for carriage traffic on three days in the week. The market, which was much too small when London did not contain more than half its present inhabitants, has not enlarged its space, although the demands upon that space have increased with the increase of population, and its present condition is a disgrace to the Metropolis. The covered parts and the avenues are the most inconvenient for the purpose required, and unnecessarily consume space. Architecturally it is a discredit to the age.

Our attention has been attracted to it by a complaint in relation to Covent Garden, made to the Privy Council. The manner in which that complaint has been treated by the Local Board in whose district the market is situated shows how hopeless it is to expect any measures of improvement from our District Boards as at present constituted. They have not the power to effect substantial reforms, nor the willingness, as it appears, to do what is in their power, that is to urge the necessities of the case upon those who have the power. Covent Garden Market is the property of the Duke of Bedford, and his Grace derives considerable emoluments from the tolls and other sources, and at any rate should provide sufficient accommodation for the public wants. The Strand District Board have had this subject before them many times, and the inquiries always led to one result—insufficiency of accommodation; but it does not appear they have taken steps to enforce upon the Bedford office the necessity of enlargement, but have left it as a business beyond their control.

Very lately a complaint was made by a resident of Henrietta-street—a street leading out of the market—and the complainant took the irregular course of writing to the Privy Council instead of the District Board. His complaint in substance was this—that dung carts were often detained in the street several hours on the market days, that some of them contained fæcal matter, and that this practice was highly offensive, and, in fact, injurious to health. The Privy Council referred this letter to the Strand District Board, asking for inquiry and explanation. If the allegations had been well founded, no doubt the Board had power to take action, as in any case of nuisance. The Board at once referred this communication to their Committee of Health, who went into the question fairly and completely, and then reported to the Board. Their report stated that the complaint was in many points unfounded, and in others greatly exaggerated; that no evidence had been adduced to show that fæcal matter had been observed in any of the carts. If there had been, it could only have been in an accidental case, and that was highly improbable, as cesspools did not now exist. The Board ordered this report to be sent to the Privy Council, and a reply was speedily received acknowledging that the Board had done all that it was in their power to do, but suggesting that they should represent to the Duke of Bedford the inadequacy of the accommodation for all the purposes of the market.

It may be desirable at this point to explain as to the presence of these dung-carts in the streets adjoining the market. The process is common to many other markets, and is one combining convenience with economy. It is this :—The market gardeners bring in their fruit and vegetables, very much of it in baskets; they deposit these baskets in the market, and then go with the empty waggons and carts to collect stable litter, and when they have done this, call back at the market to pick up the baskets which are then empty. It very often happens that from various causes these carts will linger much longer than necessary, and no doubt their contents are offensive to the senses of both sight and smell, but it cannot fairly be urged that such are injurious to health. In the majority of cases the hindrance arises from the want of space, which, as we have said, is much too limited for the traffic. If the area of the market were enlarged it would then be practicable to have some shed or warehouse where the baskets of each owner could be deposited when empty, and the dung-carts come there to receive them. Such an arrangement would prevent the adjoining streets from having this objectionable kind of traffic passing through them, or being admitted into them. It is obvious that the arrangement by which the market-gardeners take away stable litter is a convenient one, and saves much in carriage that would otherwise enhance the price of the produce.

We must now draw attention to the conduct of the Board. Up to the point we have named they have acted properly enough; but on the receipt of the communication from the Privy Council, they appear to have diverged from the straight path, and it was moved that the whole matter should be referred back to the Committee of Health. For what reason does not appear to those who look upon the matter from a practical point of view. The investigation had come to the same result as all previous inquiries—namely, that the market was very much too small in area, and too incommodious in construction, and hence disturbance and annoyance in all the adjoining streets—the dung-carts being only one, and a subordinate one, among many. The remedy lies in providing better accommodation—increased space. This was the view taken by the minority of the Board. An amendment was moved by an old resident of Covent Garden, that the suggestion of the Privy Council be followed, and that a representation be made to the Duke of Bedford, laying the documents before him, and that he be asked to co-operate with the Board in the enlargement and improvement of the market. The amendment seems to us the common-sense view of the matter, and, further, it appears to us to be trifling with a serious subject to debate the presence of dung-carts under such circumstances as a great sanitary measure. It is a question of public convenience, and under a better administration of affairs, the Duke of Bedford must either make the market equal to the public requirements, or he must surrender the monopoly he holds in it. There appears no reason to doubt but that he would be willing to make considerable improvements, as intimations have been at former times given to that effect, and this was only another reason why the Board should use its influence to urge the exigencies of the case upon him.

We were surprised to find that the amendment was lost by a vote of thirteen to six. Only twenty-three members of a Board of forty-nine felt it a duty to attend upon a question of importance, and one that affects not only the district but the whole of the Metropolis. The matter is referred back to the Committee of Health of the Strand District Board; and an explanation has been given to us which may, or may not, be the true one, but which we are obliged to pay some attention to from our inability to find a reason for declining to present the case to the person who alone has the power to apply a remedy—the Duke of Bedford. It is stated that several gentlemen at the Board are of opinion that an inspector ought to be appointed to look after the dung-carts and other matters. The salary of another functionary is to be added to the expences of a Board, the expenditure of which is already out of proportion to its outlay upon works. There would be no objection to this if an inspector could render efficient service. That he could do so is denied by the gentlemen who supported the amendment, who are the most of them residents in or near the market, and all of them above suspicion as to their motives and intentions. They allege that the inspection of the market is already sufficient; that considering the amount of business done, and the small accommodation, the management of the market is equal to that of any other in the Metropolis; that with such limited space an inspector could do nothing but harass those who come for legitimate purposes to the market.

Whatever may be the ultimate action of the Board in this particular case, that which they have done already adds another to the many proofs that our local administration is defective and expensive; and that it is in the power of a small Board working in a district of London to obstruct a work of metropolitan improvement. The constant outcry is economy, while they adopt a penny wise and pound foolish policy; and they cry out for local self-government, their notion for such government being at variance with all sound principles of government. They do not seek a truly representative government, but a government of parties, parishes, and cliques.

◆

SUNDRY BUILDINGS IN THE ISLE OF THANET.

(*Concluded from page* 200.)

MINSTER, the ancient capital of the Isle of Thanet, is now only a village in comparison with the neighbouring towns of Margate and Ramsgate, or even Broadstairs. It is a picturesque and pleasant village, bowered in trees, and standing near the edge of Pegwell Bay, commanding a fine view of Sandwich, Richborough Castle, and a large extent of the county of Kent, the hills of which rise beyond the intervening flat marshy ground that once formed the channel of division between the island and the mainland. The name of the place, formerly written *Mynstre*, is derived from the church and nunnery founded here by the

Saxon Princess Domneva, granddaughter of Edbald, King of Mercia. The curious monkish legends related of the circumstances of its foundation we may dismiss as incredible, but reliable fragments of the Abbey of S. Mildred, named after one of the daughters of Domneva, are still extant, and are evidently of very great antiquity. These may have been the work of Edburga, daughter of King Ethebert, the third abbess, who is said to have built a new, larger, and more stately temple than the first, and dedicated it to S. Peter and S. Paul. The Danes, however, devastated and burnt the establishment at the end of the 10th or commencement of the 11th century. Some remains of the tower of this chapel are yet preserved in the grounds of the court lodge in the village, which was a grange of S Augustine's Abbey. A careful examination leads us to think that portions of the present church were of Pre-Norman erection, but not very long before the Conquest.

This church, which is dedicated to S. Mary, is a noble and most interesting structure. The plan is that of a Latin cross, with a lofty tower and turret attached to it at the western end. The tower is Norman, but the turret we consider to be Saxon, and yet it does not exhibit the characteristic alternate long and short quoins which generally distinguish the work of that era. The nave, however, has Norman work, of at least four successive dates, and the westernmost and most ancient arches in that style are built under earlier and thicker walls, in which part of a semicircular-headed clerestory window is still to be seen. This thicker walling and window we consider to be a portion of the same original church to which we think the turret belonged, and these we refer to a date shortly before the Conquest, and we suppose the west-end of the nave was then flanked by two turrets in the usual fashion, and that still left, with its rude pyramidal roof and masonry, was one of those turrets. Other clerestory windows of the Norman date are said to exist beneath the plastering which covers the walling above the arcade, and we are glad to learn that the vicar, the Rev. Albert Sitwell, contemplates shortly opening them. As it will be remembered that we have noticed a general absence of clerestory windows in the churches of Thanet, these specimens will be somewhat unique in the district. These nave arcades of Minster Church, with their numerous variations of detail, afford an interesting study of Norman architecture. The latest of the arches, the two westernmost on the north side, are very richly ornamented, but the rest are more or less plain in comparison. The nave aisles have windows which have been badly restored with Decorated tracery. The rest of the church eastward is of good Early English architecture. The chancel and crux have original vaultings of stone, the former of which has so thrust out the walls that flying buttresses have been added to sustain them. The diagonal vaulting ribs of the latter, being of wide span, die upon the piers at a point far below the capitals of the transverse arches; the other vaulting ribs are received by shafts corbelled from the walls.

The church was, we were told by the unusually intelligent clerk—Mr. May—restored partly but not wholly, under the superintendence of the late Mr. Arthur Ashpitel, and we doubt not that the well-known antiquarian knowledge of that architect was judiciously used, and that otherwise greater damage than has occurred to this valuable fabric would have been perpetrated. We regret to say, however, that the character of much of the work that has been executed by local hands is anything but what it ought to be.

The church of S. Lawrence, which stands just outside Ramsgate, has been a greater sufferer than even that of Minster from injudicious so-called restoration. A local builder of the name of Smith has been allowed to try his 'prentice hand as an architect as well upon it, with the saddest results, for we have seldom seen so fine a building so badly mauled. This church was anciently a chapelry to Minster, but was made parochial in 1275. Its style, therefore, as might be anticipated, is somewhat later in the Transitional, the arches being all pointed, though the columns have Norman proportions and cushioned capitals. It is a cross church, with the chancel about as long as the nave, which is much shorter than in any other of the churches we have described, having only three bays. The tower is over the crux, and supported upon fine piers, which have half-cylindrical shafts to the arches opening to the nave and chancel, and edge nook shafts only to those opening to the transepts.

The chancel has two large arches on each side opening to the aisles, and an additional smaller one on the south side. These are carried upon square piers, with delicate nook shafts to the edges, and they are built with quoins only of ashlar, and filled in between with split flints, the effect of which is good. There is an excellent roof to the chancel, similar to that of S. Peter's in construction, but only ceiled with boarding over the sacrarium. The eastern windows are poor modern ones, of Early Decorated type, and the western one Perpendicular, filled with tolerably good modern stained glass. The great five-light window is the best, and has a large figure in each light, under canopy work of subdued white relieved with yellow. The figures, representing Our Lord and the four Evangelists, are well drawn, and stand out effectively. There are good passages in the smaller windows, but they are not so simple and harmonious.

Externally the church is somewhat peculiar, as the chancel aisles seem to dominate entirely over the nave aisles, the former being the higher and carried westward, so as to include the transepts, which have no independent projection. To the south aisle of the nave there is a curious old porch, and another porch has been lately added to the south chancel aisle. A small Norman arcade is carried round the lower stage of the tower, just above the roof around.

Both at Minster and at S. Lawrence are a few specimens of the old brick cottages, and as each example has some curious variety, they are all worth examination. At Minster there is one near the vicarage, that has been added to and transformed into a pleasant villa residence, but the bay windows put to the lower story, and the sashes inserted into the upper one, while adding to the comfort have detracted from its character. Formerly the façade must have been very charming, as it is profusely diapered over the whole surface, and in that respect is the richest specimen of its class which we have met with. In another cottage of more recent date have been embedded many fragments of Saxon and Early Norman work, such as incised string-courses—remnants from the monastic building we have described. One of these relics is a most curious stunted column, with richly-carved capital of evidently Pre-Norman character, which should on no account be passed over. A double cottage facing S. Lawrence Church is remarkable for its quoins of brick quaintly cut into a series of alternate convex and concave curves on the ground story. We fear lest our readers may become weary of our constant recurrence to these examples of domestic works, but we are anxious that they should receive due attention, and can assure students that they will find an infinite variety of design, and a delicate treatment of detail in a common and cheap material, the value of which is rendered more striking by the utter absence of all similar thoughtful work in the numerous ugly though comparatively pretentious buildings with which the island is being disfigured at the present time.

We shall now, however, conclude these notes of the works ancient and modern of the Isle of Thanet, although they have been by no means exhaustive of all the subjects of interest to be found in it, with a few remarks upon the exterior effect of the fine group of buildings at the Grange, on the west cliff at Ramsgate. Here the late Welby Pugin built his own residence, a small monastery and church, and a college, to which his son and successor is now making additions. The site upon which these stand is one of very remarkable beauty, at the extreme end of the town. From the road at the back of the Grange, running between it and the monastery, the grouping is very charming, and only wants the completion of the spire to the square central tower of the church, the addition of which would be a graceful memorial to the genius of the founder. Unfortunately, the colour is gloomy, as the church is faced with split black flints, and the Grange with ordinary stock brickwork, and have but little relief from the freestone dressings and a few thin bands of freestone as bonding courses, besides which all the roofs are of blue-black tiles; had these been the red variety of tile instead the effect would have been much better. The architectural details are generally of a good type for the time when they were done, but show not much originality or spirit, if we except the capital gate pillars and lion on the top of one holding a shield, which is so excellent in character that we should not grudge in the least to its designer the motto *en avant* below. We must, however, question its applicability to the far different and more pretentious character of the work of the present Mr. Pugin, which may be seen in the additions to the adjoining college. "*En avant*" we know is the motto claimed for the so-called *Victorian* perversion of Gothic details which characterizes this as well as the Granville Hotel by the same architect. It is akin to that of the notorious Strand Music Hall, for the same exaggeration, though with weaker handling, is observable throughout these buildings as has become familiar to our readers in that. To our mind, however, the movement is one of retrogression and not of progress, and we infinitely prefer the modest treatment of Gothic detail from which the founder of this excellent pile of buildings never departed.

Note.—The proper name of the interesting old manor house in Smack-street, near Broadstairs, referred to by one of our correspondents, is, we believe, Calais Court; and Calais Grange is that of the farm described by us, and situate at a little distance, near Stonehouse.

◆

THEORY OF THE ARTS.

MODERN ART.—THE ANALYSIS.

(*Continued from page* 166.)

"Though England resounds with the buzzing of spinning-wheels, people live unclothed: though England is black with the digging of fuel, people die of cold: though England has sold her soul for commerce, people die of hunger. All this must be remedied."—Ruskin.

A STARTLING paradox, and yet profoundly true, the foregoing sentence only bares a truth that is applicable alike to our moral, social, and artistic existence. With the unparallelled advancement of science and the development of commerce and industry during the last three centuries there still seems to be an overwhelming disproportion as regards these three aspects of our civilisation. I have endeavoured in the preceding remarks to explain the anomaly as far as historic and external evidence can, especially as regards the arts in general, and architecture in particular. In the following paper I propose to analyse the character of the Revival, more particularly as it affects art conception and architectural design.

The Revival, especially in countries on this side the Alps, must be viewed under three aspects, and its earliest condition must be distinguished from its after or consequent effect upon art in general. In its first phase its efforts were, as I have observed, characterised by a reversal of that process which all preceding art systems, as regards architecture, went through. The change began not in the structural principles, but in the details, and from these it gradually transformed the whole constructive character. Such was the case in what may be termed the "after-Gothics" of

Germany, France, and England, and the Elizabethan was the result of the process in the latter country. Now, it is to be remarked that bad in principle as this process was, it nevertheless, by leaving unchanged the general construction and features of the indigenous Gothic, produced a style, however deficient in homogeneity and feeling, more distinctive and suitable than the phase that succeeded it.

The second phase was a more complete transformation. It was begun and aptly represented in this country by Inigo Jones, Sir Christopher Wren, and their followers. The Renaissant feeling had now reached the larger constructive features which were conformed to the classical examples of Greece and Rome. Flat roofs, porticos, parapets, and the entire paraphernalia of Greek and Roman buildings, became completely reproduced in accordance with Vitruvian rules and dogmas, but in utter disregard to our climate and actual wants, This middle and transitional stage of the Classical Revival culminated in its abject slavishness at the beginning of the nineteenth century, when unblushing disguises took the place of all constructive truth. A more complete climax to architectural counterfeit and absurdity can hardly be conceived than the erections in pseudo-classic taste which were designed by the elder Smirke, Nash, Wilkins, Dance, and other leading architects of the last century. The Greco-Italian dress they assumed was in utter discordance with the mechanical construction, which was itself a sham. The art of architecture could not reach a more degraded condition than when its construction became false no less than its decoration. Homogeneity it had, but it was the homogeneity of falsehood. Sham pilasters, pediments, and entablatures concealed a system of construction that was a mere subterfuge—a combination of forces the very seeds of its own destruction, and totally at variance with the simplicity of the principle of external decoration. Compo came to the aid to render the deception still more glaring. After the bare arrangement of plan, "rule and line" did the rest. The Renaissance commenced under a wrong process, and it was doomed to end wrong. When Classical feeling was reawakened by Cimabue and Giotto, and evoked by the architectural genius of Brunelleschi, Michel Angelo, and Alberti, on Italian and native soil, it was a natural effort, a rekindling of the spirit of an art that had laid dormant for nine centuries. Subserviency to climate and actual construction characterised the decorative features of the early Renaissance in Italy, but when it was transplanted into northern climates it ceased to have that character. Again, neglect of the primal condition of climate and age led to the loss of that connection between the constructive and decorative principles which had ever a mutual dependence in previous styles of art. Under the second phase of the revival especially, art had lost the *moral* power, its truthfulness, which had characterised it during the middle ages, and, indeed, under the ancients. Now, there was a decided deficiency in its *moral* expression, in other words, its honesty and persuasiveness. Classical art believed in its Paganism, Mediæval art in its symbolical Christianity; but the Renaissance believed in neither, so it wrought in insincerity. It really expressed no faith, for there was none at that time to express.

Hence for ecclesiastical purposes the Italian Renaissance was not so well adapted as for secular uses, though the great Temple of Christendom at Rome and our own Metropolitan Cathedral are noble examples of its conversion to Christian worship. The city churches of Wren are not up to our ideas of church edifices, though some of them, internally especially, are really far more adapted to our Reformed Service and to the requirements of large congregations than the old conventional type of nave and aisles. The style, too, admits of great modification and variety as well as sublimity of effect. Little as this style has lent itself to ecclesiastical uses, I do not doubt but that the necessity for a modified ritual more suitable to our present requirements will before very long bring into requisition the Anglo-Italian style as one at least capable of development in this direction.

The third phase of the Revival may be said to be more cosmopolitan and eclectic than classical in its character, and I think may include our present efforts. It may be considered as commencing with the Gothic Revival. Secular impulses had for a while abated their energy and force in obedience to a natural reaction when the Revival of Mediævalism commenced. It is certainly a mere sentimental revival, and it would be absurd to attach to it any significance or permanent character. Here, again, a return to the letter, not the spirit, is observable. Its first essays were more reproductive of faults and detail of a late debased style than principles. Hence the same error is noticeable—namely, the return is confined to the smaller and unimportant features, not the structural principles, of the style. Thus we had such extravagant repetitions of misapplied accessories as flying buttresses, pinnacles, useless parapets, crockets, and other "prettinesses" of a recent but now happily defunct school, of which Walpole's Strawberry-hill Gothic was about the earliest example. A more thoughtful process is gradually appearing both among Classicists and Gothicists. Eclecticism has taken the place of slavish imitation, though we still have many architects and artists who persistently adhere to old types and Mediæval notions despite the advanced age of the world. Instead of taking, however, our own styles as their departure, they profess to admire more the foreign Gothics of Italy, Germany, and France, with all their beauties and blemishes. Hence our architects, having ransacked, measured, drawn, and re-executed *ad nauseam* our English specimens, have now gone abroad for fresh scraps and inspiration from which to re-stock the markets of architectural fashion and slake their thirst for "novelties."

Such a mania for foreign ideas, with all the crudeness of ignorance, age, and style as we often meet with now, can never have any permanent effect upon art, though it may tend to widen the basis of that generalisation of art elements to which all our scattered and fragmentary studies (illusive often in themselves) and our painstaking specialists and copyists are contributing, however unwittingly.

We are living in a practical fact-collecting age; no other period has been as prolific, so painstaking, so antiquarian, as ours. The nineteenth century is, I think, emphatically an age of facts, not principles. It is devoted to a résumé of all past periods and materials. Never before has there been such a profusion of archæological and critical research and materials; never before such a host of individuals and societies devoting themselves to the pursuit, collection, and elucidation of ancient records, monuments, and arts. This fact-collecting age, if I may so term it, must soon exhaust itself, and the energies that have been spent on it must be directed in other channels. A vast deal of physical effort and material wealth has been expended, but there is a sad disproportion between this expenditure and the result. How is this? Is it not to be traced, as I have indicated, to the discordance between the physical, intellectual, and the moral powers? There is a want of harmony between these three great principles of all human effort and action—a great hiatus between the two first and the last. This, then, is the general character, the desideratum of the Art Revival, and perhaps no human effort is so reflective of this want of harmony as art—I mean fine art design. There was an affinity between the old civilisation and the theological or moral spirit, so there is now between the scientific and industrial spirits—the unity of the first was expressed in the fine arts, that of the last in the mechanical arts and improvements of our age. There is at the present day a sad want of reconciliation or agreement between commerce or industry and taste, to be explained by the need of that bond of unity which was sustained under earlier and more homogeneous states of society. The restoration of unity between these activities of society will much depend on education. One of the most profound and philosophic of modern writers—Herbert Spencer—has maintained the great need of a proper subordination of our faculties and their training, the proportionate subservience the different kinds of knowledge should bear; and in the next paper I will endeavour briefly to apply practically the principle to the arts.

G. H. G.

NOTES FROM NEWCASTLE-UPON-TYNE

(From a Correspondent.)

The Social Science Congress, held in Newcastle during the present week, will no doubt draw a good many visitors and a great deal of interest to the town, and so it may not be out of time and place here to jot down a few particulars respecting recent architectural progress in the northern metropolis. The local architects have not much reason to thank the late Richard Grainger for his enterprise in supplying buildings that were not immediately required, and what caused for a long time a stagnation in their work. Within the last six or seven years, however, the increase of population and commerce has demanded new buildings, and thus given scope to Newcastle architects to employ their skill for the adornment of their town. Handsome though Grainger's street buildings undoubtedly are, the mind cannot help desiring a relief from the Classical uniformity which they to a great extent afford, and it is with pleasure I notice that this desire is in course of gratification. Indeed Newcastle is fast acquiring a right to be called (in a modern sense) an "architectural" town. On entering it by railway, and emerging from the ugly portico of the splendid central station, one sees that a new street has been formed giving direct access to the very heart of the town, and thereby of course opening out the remainder much more readily and conveniently both to stranger and citizen than before. The roadway of this thoroughfare (Grainger-street West) is almost complete, but only a few of the intended buildings on either side of it have yet been erected.

Passing the picturesque old church of St. John, within its pretty enclosure wall and palisade (which have taken the place of the high brick wall that formerly concealed the edifice), I find the first of the new street buildings immediately adjoining the Savings-bank. It consists of premises used for shops and offices, and without being by any means a failure, it is certainly not very satisfactory. Probably the contiguity of the Classical façade of the Savings-bank and the desirability of working somewhat in harmony with it as far as height and proportion were concerned fettered the Gothic powers of the architect. The ugly gable of common rubble exposed above the roof of the bank is a great eyesore, and must surely have been an oversight. The gablets of the dormer windows, with their tops cut off to make way for a hipped roof, are not beautiful. Further up the street there is an extensive block of buildings by the same architect, displaying much greater talent, and forming an ornament to the town. The building is French in feeling, but with a strong Anglican treatment, and the result is very fine. The skyline is well broken by one large gable, and by three smaller gablets of different sizes containing dormer windows. The balustrade between these above the main cornice is excellent, as is the fenestration throughout the building. There is plenty of well-executed carving, without any superabundance or excess of it, and the whole thing displays so much care and thought in design that I am sorry to find fault with it. But faults there are. The crockets on the watertables of the gables, for instance, are too far apart, and the ribbon bearing a motto carved in stone on one of the most prominent parts might have been omitted with advantage, or its place supplied by a conventional scroll or tablet. Surely it is an outrage to the material to represent in brittle stone a gaily flowing ribbon, as it really appears.

Further up the street we have another Gothic building, which looks somewhat meagre from its lack of ornament when compared with its more handsome neighbour. I regret that Newcastle will not be able in the case of this thoroughfare to boast of an entirely Gothic street, for one house is about to be commenced in it designed in the Renaissance style of the reign of Queen Anne.

Returning to the railway station, it will be observed that the Roman Catholic cathedral opposite has received an adornment in the shape of a picturesque little tower and spire surmounting the passage way and staircase recently made between the residence of the clergy and the sacristy of the church. These older buildings are by the great Pugin, and as such will always be interesting, even although Gothic architecture has made progress since his time. The Roman Catholics are at present building at the east end of the town a large church, to be dedicated to S. Dominic. It will, we believe, depend for effect more upon its grandeur of size and proportion than upon any elaborate workmanship. It is to be Gothic, of a Rhenish type, and will have an eastern apse, a nave with side aisles, and a western narthex, tower, and spire. It has not made sufficient progress as yet to enable me to judge of its merits or demerits. I believe the Roman Catholics also intend shortly to commence a church at the west end of Newcastle. It is a pity that while doing so much they do not complete their cathedral by the erection of the lofty tower and spire contemplated and designed by Pugin.

The architect of these recent Roman Catholic works is also at present engaged with the building for the offices of the Northern Institute of Mining and Mechanical Engineers. It is a pretentious structure, occupying a prominent site, and will cost a large sum of money as compared with its size. Although it may be heresy in the eyes of many Newcastle people, I cannot help saying that I am deeply disappointed in this building. There is to be a great deal of fine and delicate carving, but much of it is placed so far above the eye as to make its beauties almost indistinguishable. The legend on the string-course telling the name and purpose of the building is also so small and indistinct as not to be made out without great difficulty, and surely such an inscription should be executed so that "he who runs might read." The flutings on the buttresses destroy, I think, the repose so necessary for such parts, besides being puerile in themselves. The flat doorhead under the lofty oriel window looks weak. It does not give the requisite idea of power to sustain the weight above it, and however much we may prefer the flat-headed door for domestic purposes, we cannot help thinking that in such a case as this the arch form should have been adopted. The bands of Carlisle stone interspersed here and there have no effect beside the warm-tinted Pruddam stone of which the mass of the building consists. But I have now had fault-finding enough, and being mindful of the old adage about "fools and bairns," I am content to reserve my final verdict until the completion of the building. The chief room of the Mining Institute is to be called the Wood Memorial Hall, and will be a magnificent apartment. It is lined internally with Caen stone, and will have a fine waggon-headed ceiling. The floor is carried by the Dennet fireproof arch. The hall will be used as a library in connection with the Literary and Philosophical Institution, besides the other purposes for which it is intended. A bridge of communication will be constructed between the library of the Literary and Philosophical Institution and its new adjunct, the buildings conveniently adjoining each other.

The shareholders of the National and Provincial Bank of England are at present erecting new premises at the corner of Mosley-street and Dean-street, from the designs of their well-known London architect. The building is, I regret to say, in a Classical style, and although the neighbouring Grey-street might call for such a treatment, I consider its selection a most excellent opportunity for a commanding Gothic building thrown away. As far as it has gone the new bank displays no new features worthy of remark, but I am told the design for the completed work is a very clever one.

(*To be continued.*)

ROMAN REMAINS AT HOLBURY, NEAR DEAN.

At the meeting of the Wilts Archæological Society, last week, the Rev. G. S. Master read an interesting paper on "Roman remains recently found at Holbury, near Dean." He began by expressing his conviction that sufficient attention had not been given to this particular branch of antiquarian research, at least in the southern portion of the county; and that if more careful investigation were made, numerous at present unsuspected vestiges of the Roman occupation would be brought to light. He thought he could trace the existence of a chain of Roman buildings under the chalk range of Dean Hill, between Salisbury and Romsey: beginning with a villa, at present involved in some obscurity, in Clarendon Wood, proceeding thence to West Dean, where another of some importance was laid bare in 1846, during the formation of the railway, which passed over the site, and where portions of a tesselated pavement were dug up as early as 1741, and terminating in the scene of his recent excavations. This was a spot about a mile beyond the boundary of the county of Wilts, where, in a bed of yellow sand, forming the crest of a wooded ridge, known as Holbury Copse, a gamekeeper, digging out a lost ferret from a rabbit-hole, threw out a quantity of potsherds. These were accidentally brought under Mr. Master's notice, and being evidently Roman in their character, led to a careful investigation of the place, permission to examine it having been kindly granted by Sir Francis H. Goldsmid, M.P., the owner of the property. The result was the exhumation of a vast deposit of broken pottery, the remains, Mr. Master thinks, of at least a thousand vessels. Among the fragments were some specimens more or less uninjured, which were laid before the Congress, and comprised ollæ, or jars of rough coarse clay, used for culinary purposes, and drinking cups of a harder material, all, however, of a common kind of ware, the production, in all probability, of one of the manufactories in the New Forest. The origin of the deposit can only be conjectured. From the position of the spot on the edge of a rectangular earthwork, and from the extraordinary quantity of *debris*, it is possible that here was the rubbish-hole of a Roman camp, into which the soldiers threw their broken crockery. On the other hand, the presence of unbroken amongst the broken vessels, and the entire absence of bones, oyster-shells, or other indications of the proximity of human habitations, are circumstances difficult to explain. After directing notice in detail to the various specimens submitted to the meeting, Mr. Master concluded by saying that the interest excited by this discovery had led to another, for he had obtained indisputable proofs of the existence of a Roman villa or other building of importance, upon lower ground, about a quarter of a mile distant, where a tentative examination already made had disclosed the foundations of a rectangular enclosure, 50ft. or 60ft. square, and where fragments of roofing-stones, window-glass, nails, and other objects had been found. The owner of the soil had most kindly permitted him to excavate the site, and he trusted to be able, at a future time, to communicate the result to the society.

◆

THE OSWESTRY AND ELLESMERE COTTAGE HOSPITAL.

This hospital was formally opened on Friday week. The style adopted by the architect (Mr. W. H. Spaull, of Oswestry) is "Cottage Gothic," and the building is faced with Fenn's Bank bricks, with dressings of Cefn stone and terra-cotta. The building comprises on the ground floor, a large dining room (21ft. by 13ft. 6in.), surgical store room (10ft. 6in. by 10ft.), matron's sitting room (16ft. by 13ft.), larder (10ft. 6in. by 9ft.), kitchen (18ft. by 13ft.), scullery (12ft. 6in. by 13ft.), washhouse (14ft. by 12ft.), laundry, coal and wood sheds, bath-room, large ward for four beds (21ft. by 20ft.), small ward for two beds (18ft. by 12ft.), and a nurse's kitchen with a window looking into each ward. The hall (16ft. 3in. by 14ft. 3in.) and side corridor are laid with a tesselated pavement supplied by Messrs. Boote, of Burslem. On the first floor are two wards and nurse's kitchen, corresponding with those on the ground floor; also a sitting room for the nurses when off duty, a general store room, matron's store room, a linen store, and two bedrooms. On the upper floor are four bedrooms, one having Rufford's bath with shower bath fitted up in it for the use of the nurses. The walls of all the wards are cemented with Parian cement and lined 3ft.6in. high with turquoise and white tiles, supplied by Messrs. Minton, Hollins, & Co. The thorough ventilation of the wards is secured by windows on opposite sides, the upper parts of which are hinged on the bottom to fall inwards, forming a hopper, the top of the hopper being covered with perforated zinc to prevent any draught and to exclude insects. There is also one of Arnott's ventilators in each ward.

The building has been erected by Messrs. W. Trow & Sons, from the designs and under the superintendence of the architect, the whole of the building arrangements having been conducted by Mr. Richard Westwood, as foreman.

◆

ART IN NORWAY.

While other lands have passed through successive phases of civilisation, while the arts in the South and West have attained maturity or fallen into decadence, it is curious to note (says the *Saturday Review*) how Northern territories lie still on the frontier which divides nature from art; how primitive people have not yet entered on æsthetic existence; and how art, when she does struggle into life, assumes only simple and elementary forms. Observations thus made are like the notes of geologists on early strata of the earth still under mutation. While primary rocks indicate that Norway was amongst the first of created lands, primitive art conditions show that she is one of the last in art development. Christiania, the capital of this northern kingdom, contains scarcely a building worth notice. Broad streets are laid out at right angles; the New Palace, the University, the Government offices, and the National Gallery, are modern structures which might suit equally well Paris or London. Indeed, architecture, as an art, can scarcely be said to exist in Norway at all; and sculpture is almost equally unknown. *Genre* figures by M. Borch, and busts and statuettes in ivory by M. Glosimodt, are the only sculptured works which the writer can recall. Christiania, however, is not wholly without art attractions. It has a small collection of "Northern antiquities," remarkable for carved wood doors from Norwegian churches now destroyed, of the eleventh, twelfth, thirteenth, and fourteenth centuries. The most important of the series was sent to the last Paris International Exhibition; a careful cast of the work is in the Kensington Museum. In Paris the design was absurdly made to pass as an example of the Byzantine style; the historic value of the work consists, of course, in its essentially Northern character. The Norwegian School of Painting may be designated as an offshoot on the naturalistic side from the great school of Düsseldorf.

◆

VACANT BUILDING LAND IN THE CITY

At a recent meeting of the Corporation of London, attention was called to the enormous losses sustained by the City revenue from the large amount of building ground now lying idle and unproductive in the immediate vicinity of Smithfield and the Holborn Viaduct. The construction of the Metropolitan Railway, a few years back, took nearly the whole of the east side of Farringdon-road, or that, too, would probably still be vacant. A new poultry market is to be erected on another portion of this land, but irrespective of this, there still remains a vast area of valuable building land lying unproductive. In some quarters it is believed that the large accumulation of building sites in the hands of the Corporation, both before and since the completion of the Holborn Valley improvements, is mainly attributable to the exorbitant prices which are asked for the ground. If this be so, the Corporation is acting unjustly, not to its constituents only, but to the neighbouring property-owners. A local contemporary asks why the Corporation retains so large a quantity of unproductive land in its possession. If they cannot dispose of it privately, why not sell it by public auction to the highest bidder? It would be easy to put a reserved price on each lot so as to prevent the property from being sacrificed. If the Corporation does not approve of a public sale, why not utilise the land themselves by building upon it, and let the houses or shops? It may be objected that the Corporation cannot become speculative builders, but they might as well speculate in one description of property as another, and if the erection of houses upon the land which they now hold would facilitate the disposal of the property, and put a stop to the waste of revenue now going on, there appears to be no substantial reason for refusing to adopt that course. We may state that the Corporation have applied a part of their land to building dwellings for the working classes, on the same plan as that initiated by Sir Sydney Waterlow and the Improved Industrial Dwellings Company. These dwellings, which adjoin Clerkenwell Workhouse, at the extreme north of the vacant land in question, are called Corporation-buildings, and are fairly remunerative. Could the Corporation of London do a more useful and profitable thing than build more of these dwellings? We hope that the new Queen Victoria-street in the City will not present for as many years the same ruinous spectacle as that so long displayed by the Farringdon-road. In regard to the former, the proposition made a few made a few months ago in the Building News by Mr. Douglass Mathews, for the erection of "flats" or dwellings for the middle classes, is worth careful consideration.

◆

GAS PURIFICATION.

THE referees appointed by the Board of Trade have been experimenting on the purification of gas, especially from sulphur. They state in a report, that in regard to purifiers, as well as scrubbers, "the gas in some cases was *found to contain more sulphur when it left the 'purifying' material than when it entered it!*" The italics and note of admiration are taken from the report. The addition to the impurity in one set of experiments (lasting a month) was at the rate of 34 per cent., and in another set (lasting an equal time) as much as 37 per cent. In another set of experiments, carried on at another gas factory, the results were simply *nil*, the gas coming out as it went in. After the gas enters the gasometers there are further intricacies. The water on which the gasholder floats absorbs sulphur, ammonia, and sulphuretted hydrogen from the gas. A hot shining sun on the exterior may so warm the metal as to vaporise the filmy coat, and the impurity which is evaporated then "goes off with the gas." Thus the gas will leave the holder in a worse state than it entered it, a fact which is known to occur sometimes, though the cause does not seem to have been distinctly apprehended. These curious investigations, and others of a like nature, are still pending. The referees have invented a new description of sulphur test.

◆

NORTHERN ARCHITECTURAL ASSOCIATION.

THE usual quarterly meeting of the Northern Architectural Association was held on Tuesday evening, in the Old Castle, Newcastle-on-Tyne, Mr. Thomas Oliver, president, in the chair. Mr. J. U. Braithwaite, of Darlington, was elected a member. The reading of a paper on "Church Restoration," by Mr. R. J. Johnson, and another on "Early English Statues," by Mr. F. R. Wilson, was deferred. Mr. Oliver read the following address on the position of architects in regard to science. His object, he said, was to call the attention of the association to a prominent omission and a prominent fact in connection with the architectural profession, and the development and progress of what was called social science. Not only as a body, but as individuals, architects had hitherto, in his opinion, held themselves aloof from discussing scientific matters, not only to the detriment of science itself, but to their position as scientific men. Architecture, while essentially an art, was also a science. Its practical application incited a knowledge of the science of construction in its ramifications, details, and materials, and in its varied adaptations to the material wants of mankind. He maintained that the architect must be a man of science if he aspired to eminence and public appreciation. Called to lay out towns, plan streets and dwellings, it became absolutely necessary that his scientific qualifications should be brought into requisition, as well as that artistic power which enabled him to clothe a building with the greatest beauty. Architects as a body, he must confess, were both scientifically and practically competent to grapple with all such difficulties, and indeed, in their ordinary practice, really did so. It was, however, a singular circumstances that architects did not take that active part, and apparently that active interest, in purely scientific matters as the members of the medical profession, both collectively and individually, took. On the one hand, the architect was practically conversant with the improvement of unhealthy dwellings, the removal of impure excreta, the improvement of drainage, and the general application of the principles of ventilation, as well as the designing of new streets and dwelling-houses; while, on the other hand, the medical practitioner knew and dealt with practical results rather than with practical scientific remedies. He referred, of course, to the bricks and mortar, and not to the medicinal question, but did not for a moment detract from the influence of the medical man. He pointed out that architects, inasmuch as they had so much to do with the dwellings of the people, were the best persons to assist in remedying the causes of disease in regard to drainage, ventilation, &c., and he was persuaded that no religion, education, politics, laws, or penalties would so greatly benefit mankind as a healthy and happy home; and how to make this no one knew so well as an architect. In conclusion, he urged the meeting to take advantage of the presence of the Social Science Association, first by joining its body, and afterwards by exerting their influence and interest on its programme of proceedings.—A vote of thanks to Mr. Oliver for his paper brought the meeting to a close.

◆

CONTRACTS.

DISPASSIONATE persons, says the *Mechanic's Magazine*, or those not in possession of actual experience of the working of these things, naturally suppose that when a set of drawings (where drawings are necessary) are proposed, and an exact specification drawn up, those tendering for the work ought to know so clearly what they are about as to leave no room for further trouble or misunderstanding between the employer and the contractor. Unfortunately, of late years this is by no means the case; and a specification, however closely and carefully drawn out, is yet a document of the most elastic description in the eyes of sharp practitioners, and so far from its being a means of preventing misunderstanding, it in too many instances is but a *casus belli* between inspector and contractor, save with a few firms whose character and reputation are beyond suspicion. The fierce competition existing in the present day, and the desire to do things cheaply rather than to do them well, is one cause for this. Very many contracts are taken now, subject nominally to the clauses of the specifications, but really in a hope on the part of the contractor, so strong as to amount almost to certainty, that the rules, although down in black and white, yet will not be too vigorously enforced, and the sole chance of profit often depends on the inclination of the inspector of the work to deal leniently with it, and to shut his eyes to sundry little shortcomings in the execution thereof.

On the whole, it must be supposed that the system works well or it would be improved, but nevertheless accidents do arise about the nature of which it is as well for all those concerned that too close inquiry should not be made. One of the distinguishing points of Brunel's character consisted in the manner of his dealing with contractors. So rigidly, indeed, did he tie them to the letter of their bond, that while on the one hand much difficulty was experienced to obtain tenders for the work on the Great Western, yet on the other that railway remains to this day, if not a model of cheapness, certainly a model of workmanship. Although a certain degree of elasticity must of necessity be admitted in the reading of a specification, yet it should be within narrow limits; if it goes beyond this it becomes license, and such business transactions can no longer be considered either sound or legitimate. It cannot be legitimate trading when a man contracts for 5,000 tons of rails at a price 10 per cent. lower than the contractor can possibly deliver them, if inspection is honestly and rigorously carried out. Such contracts are, indeed, rarely or never entertained by any respectable firms. That such contracts are, however, daily and hourly taken and carried through is matter of fact, and now and then by some accident of fortune the tricks played in order to deceive the inspectors do come to light, when of course there is "trouble." We have heard of a large firm losing some thousands of pounds in consequence of a wet night. It was in a rail contract, and the testing machine was contrived with some ingenuity to deceive the inspecting engineer. The monkey ran between a pair of uprights, and these uprights were so drawn together at the bottom as to brake up the speed of the falling monkey, so that while apparently giving a stroke of such or such force it did not give 30 per cent. of it. In the case in point the night previous to the testing day was a wet one, the testing machine was not under cover, the wood of the uprights swelled so much as to arrest the monkey's fall so considerably that the inspector noticed it, the machine was examined, and when some of the rails were honestly tested they were found wanting, and the whole lot were thrown on the contractor's hands.

A fruitful source of shortcoming in the matter of fulfilling contracts is to be found in the proneness of the contractor to take on himself to judge of the quality of work or material requisite to fulfil a given purpose. Thus, if bricks of certain quality are specified for a particular viaduct the contractor signs articles for a price which, if he acted to the letter of the bond, would leave him no profit, perhaps even entail loss. He knows this, but argues that such bricks are, in his experience or opinion, unnecessarily good; and while agreeing to put them in will really put ones of a worse quality, realising his profit from the saving thus effected. If the company for whom he is working are in difficulty about money matters he is pretty safe, because, as his drafts are not honoured up to time, the inspectors can scarcely do their duty rigorously, and find it expedient to wink at the shortcomings of the men to whom money is due but cannot be at once paid.

The staying of steam-boilers, the riveting of iron ships, are amongst the things in which scamping is frequently and rather extensively carried on; and if those voyaging to America or to Australia did but know how many lead rivets are between them and eternity, or the number of dabs of putty that do duty for rivet-heads where rivets ought to be, they would hardly lie down in their berths at night so complacently as they usually do.

It may be asked how these matters are to be remedied. This is a question harder to answer than to ask. The provision against bad work or bad material lies, not in supervision but in fair prices, and if those having the letting of contracts persistently take the lowest tenders without duly considering the circumstances of the firm tendering, they must be prepared for inferior workmanship and defective material.

◆

BUILDING NEWS SKETCH BOOK.

CHURCH OF S. AUGUSTINE, HEDON, EAST YORKSHIRE.

THIS fine old church, which is considered the King of the Holderness churches, exhibits some very fine examples of Gothic architecture. The chancel and transept are early English, the nave Decorated, the tower and modern additions Perpendicular. The doorway illustrated is from the north transept, and is one of the many examples of the Early English parts of this church. The bases to the columns of this doorway seem to be of modern introduction. W. H. B.

◆

ARCH OF TRAJAN, ANCONA.

ARCHES, as well as being raised to the Roman emperors to commemorate their victories and conquests, were sometimes erected in their honour for benefits conferred by them on particular occasions. Such is the Arch of Trajan, which forms the subject of one of our illustrations. It is built of white marble, chaste in style, and was originally surmounted by bronze statues of Trajan, his wife Plotina, and his sister Marciania. These, however, have long since been destroyed. It was erected to Trajan for his having constructed a new mole at Ancona, and thus render access to that side of Italy safer to navigators. The central inscription is as follows:—

Imp. Caesare. Divi. Nervae. F. Nervae. Trajano Optimo. Aug. Germanic. Dacico. Pont. Max. Tr. Pot $\overline{\text{XVIII}}$. Imp IX. Cos. $\overline{\text{IV}}$. P. P. Providentissimo. Principi. Senatus. P. Q. R. Quod. Accessum. Italiae. Hoc. Etiam. Addito. Ex. Pecunia. Sua. Portu. Tutiorem. Navigantibus. Reddiderit.

On the right :	On the left :
Plotinae . Aug . Conjugi . Aug .	Divae Marcianae. Aug . Sorori . Aug

NEW ELEMENTS OF HAND-RAILING.

(Continued from page 204.)

Plate 3. — Kerfing. — Its Application to Bending Moulding, Soffits, Framing, and Circular Strings.

THE method of kerfing which I published in the *Carpenter and Joiner* has been thoroughly tested and approved. The principle is simple, correct, and reliable.

Let the saw be properly filed so as to make a clean cut, leaving no ragged marks on the surface of the work. The saw should have a fence to stop the kerf at the proper depth. The success or failure depends on the manner the cuts are made. If careless and slovenly, both time and material are lost; if neatly and accurately, the work will bend to the required curve, and be equal (some think superior) to having it in the solid.

Fig. 1. Let C F be the diameter of a cylinder which is to have a band bent around it—say three or four inches wide, and an inch thick. The following method will show the solid wood between the kerfs:

Take a strip, of the same thickness as the band, run a gauge on so as to leave a veneer. Then make a cut down to the gauge line. Lay the strip on, keep the cut opposite centre A. Fasten the end to the right with a couple of nails. This done, lay a straight edge against C D; push gently until the cut closes. The strip having moved from A V to A B, gives V 2 as the solid wood between the kerfs.

This easy and practical operation being the whole secret of kerfing, one or two points are to be remembered. For example: the cut in the strip, and the kerf in the work, must be made with the same saw. Again, the band of the quarter circle is reduced by kerfing; consequently, the number of these kerfs must be added to the stretch out of the quarter circle.

To make this more clear—take twelve blocks that equal V 2, and stand them around the curve as shown. Now, open the joints to equal the kerfs; this causes the two extreme blocks to extend beyond the limits of the quarter circle, and to show a quantity of solid wood which must be equal to the kerfs. Therefore, when great nicety is required to have the bent work stand over the plan, it will be best to lay out a piece of solid wood; then make a kerf, proceeding in this manner until the number of pieces contained in the circle is complete.

Fig. 2 shows the elliptic head struck from three centres, A, B, D. This is kerfed by the same method as Fig. 1, the solid wood being indicated by V 2. In all cases the strip that gives the kerfing must be the same thickness as the stuff which is to be bent.

Fig. 3 exhibits a double curve, the solid wood between the kerfs indicated by V 2. Let the veneers be on opposite edges of each curve. The centres are at N and K.

Fig. 4. To bend a moulding inch thick around a curve struck from centre A.

Take a strip, same thickness, and run a gauge line so as to leave a veneer. Make a cut, down to the line, lay the strip on, and fasten it below A. Now move it until the cut closes. This being done, the face of the strip stands on the line A B, and gives V 2 as the solid wood that remains between the kerfs.

Adopt this method for any kind of work that is to be bent.

Fig. 5. Here the moulding is on the convex curve, which makes kerfing rather difficult, especially if the moulding is large. The bending may be done by cutting the moulding into thin strips. This, however, is objectionable, not only on account of time, but it reduces the moulding by cutting.

The best method is to make two cuts in a mitre-box, according to the bevel shown. Cut the mouldings into short lengths, say V 2. Call this blocking. Bore through the end of each piece, and fasten with brads. Let this boring be done before the piece is cut off, to avoid splitting. It would be well to use a little white lead in the joints. Clean off with coarse sandpaper, and finish with fine. If the job is neatly handled, the moulding will appear as if worked in the solid wood, and equally good.

Fig. 6. Here we come to circular framing, where kerfing can be employed to great advantage. The plan may be a quarter circle, or any curve, upon which the work stands. Let the stuff be in three pieces, and sufficiently wide to make the top and bottom rail. Have the centre piece one inch narrower, so as to form a groove for the panel. Bend the concave piece, first fastening it by a brace on both edges. Have glue ready, and lay on the piece that forms the groove; then lay the convex piece. Fasten with hand-screws, and let the work stand. When perfectly dry, cut it so as to form the top and bottom rail, shown on the left.

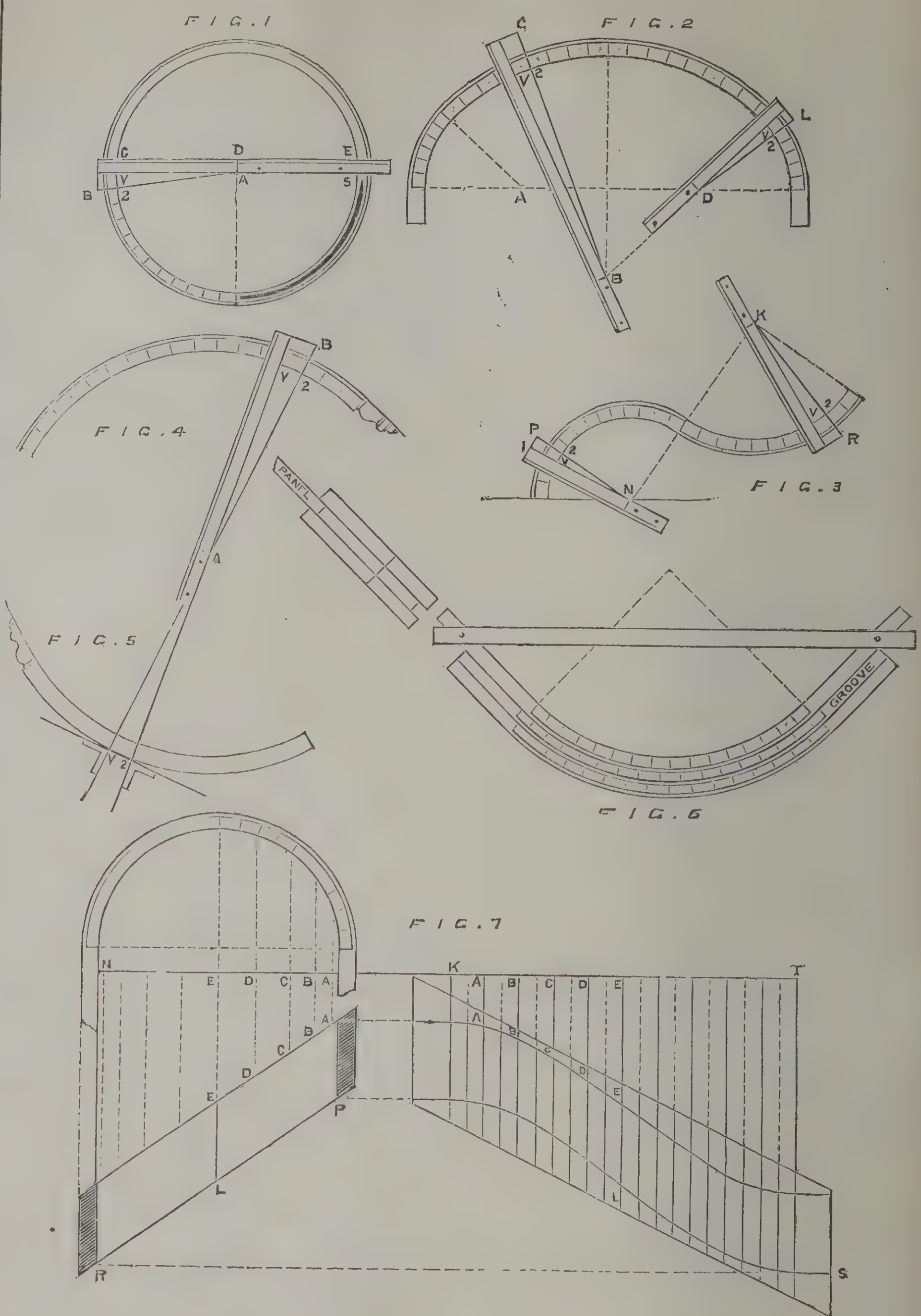
Fig. 7 shows a circular head standing on the skew, the door-jambs R P being on a line with the front of the building. A board is now to be bent to form the semicircular head. Proceed to find the kerfs by the method just given. The quarter circle shows half their number; this is sufficient to obtain the curves to be made on both edges of the board. Draw a base line, say N K T. Make R S parallel to it. Drop perpendiculars from every other kerf in the quarter circle, cutting the skew line A E. Set off the same number of parts on the base line towards N.

We have now a direction to find the curves on the edges of the board. Observe that the kerfing shows ten pieces of solid wood (kerfs not included).

This understood, take any point on the base line, say K, and set off twenty divisions, each equal to a piece of solid wood in the quarter circle. Now transfer A A on the left to the right of K. Then B B, and C C, and so on to E E. Thus giving points to trace one-half the curve. Obtain the other half in same manner. Let both edges of the board opposite E L be square, and the edges standing on the lines K and T bevelled to suit the jambs R P. Then the board, being kerfed and bent to the semicircle, and standing in position, its edges will be on a straight line, and fair with the front of the building.

This teaches a lesson in stair-building. Imagine the semicircle half a cylinder, and cut on the line R P. Then the circular head we have just bent will cover it, and the cut on the cylinder and edge of the board will be fair. Now look at the board spread out with its curved edges, and the pitch line from K representing a plank for a wreath. The curved line from A to E shows the form of half the wreath landing on a level floor. Also the thickness of stuff required to make it.

(To be continued.)



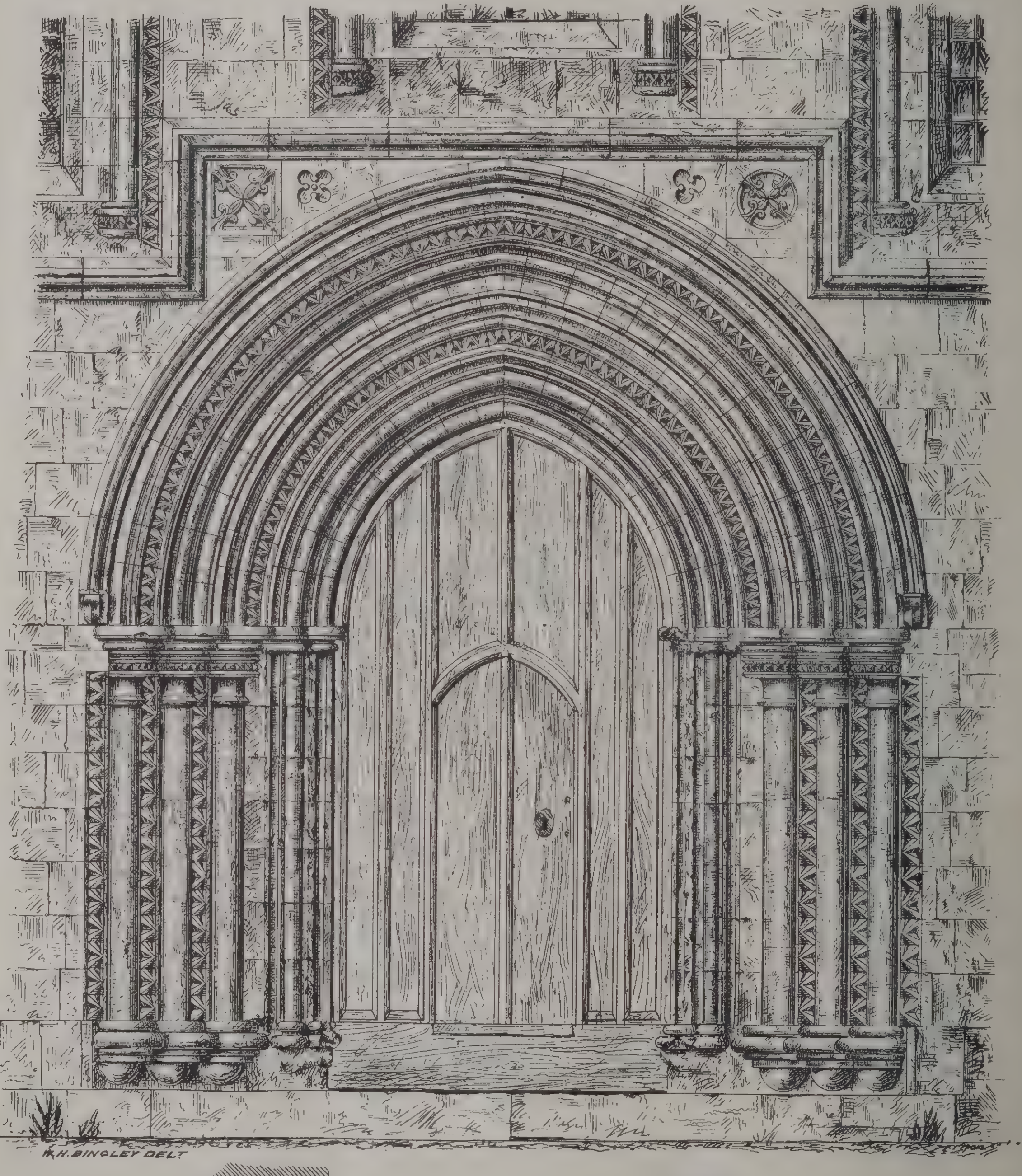
THE ELEMENTS OF HAND-RAILING.—PLATE III.—KERFING.—ITS APPLICATION TO BENDING MOULDING, SOFFITS, FRAMING, AND CIRCULAR STRINGS.

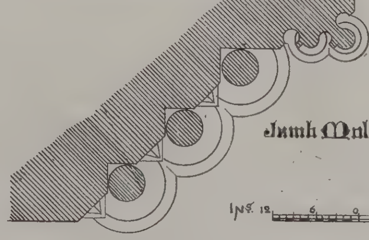
◆

Tramway Companies and Street Metalling.—The dispute between the Metropolitan Street Tramway Company and the Lambeth Vestry as to the rightful ownership of the metalling material taken up from the public roads (referred to some weeks back in the Building News) has been settled. Each party claimed the material, but the arbitration has resulted in a verdict adverse to the company, each side having to pay an equal share of the costs of arbitration.

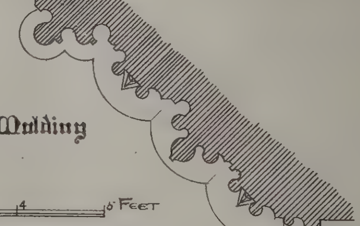
Church · of · S · Augustine · Hedon · E · Yorks.

Doorway · N · Transept.





Jamb Molding

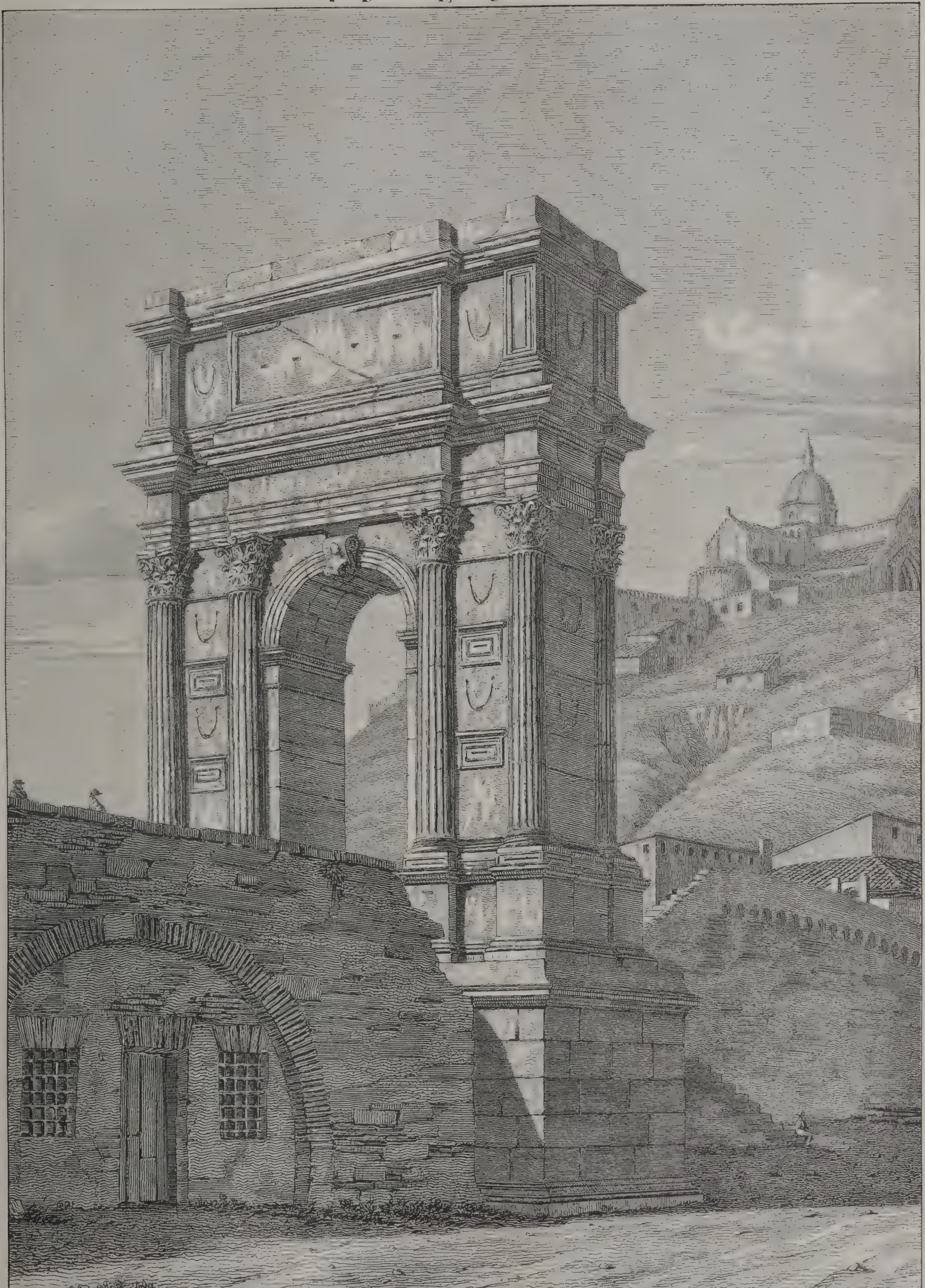


Arch Molding

SCALE

INS. 12 6 0 1 2 3 4 5 FEET

Photo-Lithographed by Whiteman & Bass, London



[illegible] & Bass

Drawn & Etched by [illegible] Taylor

Arch of Trajan Ancona

VIEW FROM THE WEST

The Surveyor.

LAYING OUT OF CURVES.

ONE of the most important duties connected with fieldwork that falls to the lot of the surveyor, as well as the engineer, is the laying out of curves. It is also one which, when required for railway purposes, demands a considerable degree of patience, skill in manipulating either whatever angular instrument be used or the chain and offset staff, and a good deal of careful calculation. Previous to the introduction of railways there was, in fact, no necessity for taking pains to lay out curves with any pretensions to real accuracy or precision, and it is, therefore, no wonder that very rude and imperfect methods were employed for the purpose. So far as roads were concerned, and such other examples as occurred in ordinary practice, it was not a matter of any consequence whether the curve "closed" properly at the "springings" or not. If, instead of starting from the tangent and ending in the same manner, it was a foot or two out, it signified nothing at all. All that was necessary was to "fudge" it in, or "jimmer" it, as it is sometimes termed, so as to make it look pretty well to the eye, and the thing was done. As to using a theodolite or a transit instrument in the operation, such an idea was never dreamed of. Directly railways were started the subject of curves and the accurate laying them out on the ground assumed an importance which had not previously been attached to it. There is no doubt that numbers of curves on railways have been laid out, or rather were, in the first instance by very inaccurate methods which have since become quite obsolete. But the majority of these curves have been long since brought to the proper contour in the process of re-laying. A considerable amount of discussion has arisen concerning the inventors of some of the more modern and scientific methods of laying out circular curves, and, as is usual in such cases, each one advances his own pretensions at the same time that he shuts his eyes and ears to the claims of his neighbour. It is not our intention in the present article to investigate the particulars of these claims or to adjudicate between conflicting evidence. It is enough for our readers to know that there are such and such methods for accomplishing the desired end, and that some of them are of great utility while others are worthless. It is needless to add that we shall not make mention of the latter description, except, perhaps, to point out that they should be avoided, which is sometimes a very useful thing to know. Speaking generally, circular curves are the only ones that are employed in practice. Other descriptions have been used in exceptional cases, such as the "curves of sines," but the difficulty of putting them in accurately in the ground, and the complicated nature of the calculations, have prevented them ever being recognised as suitable for the purpose. Theoretically, an arc of a circle is not the best curve to adopt for a railway, where the moving load travels with great velocity, especially when the radius is comparatively small. The sudden transition of the moving mass at a high speed from the straight line to the curve can only be safely accomplished by giving to the outer rail, or that upon the convex portion of the arc, an elevation above the level of the inner one, which varies with the radius of the curve, the maximum velocity of travelling, and the gauge of the line.

Briefly, all methods for laying out curves may be reduced to two principal divisions,—methods by offsets and methods by angular instruments. We shall term them the offset and the instrumental methods. Before proceeding further it will be well to explain once for all the technical terms used in speaking of circular curves, so that there may be no misapprehension or confusion hereafter. Referring to Fig. 1, let A D, C E be portions of two straight lines which it is required to connect by a circular arc between the points D and E. These points are consequently the ends of the "straight" and the beginnings of the curve, and are called the springing points of the curve, or, briefly, the "springings." If the straight lines A D, C E be prolonged in their original direction they will ultimately meet at the point B. This point is called the "point of intersection" of the tangents, and the angle A B C is the "angle of intersection." The prolonged portions D B, E B of the original lines A D, C E are the "tangents," so called from their being tangential to the curve at the springings D and E. The line B N is the "secant," and N the "secant point." It should be mentioned here that this designation is mathematically incorrect, but time and custom have sanctioned the slight departure from purely theoretical data. The value of the "secant point" in checking the accuracy of the fieldwork and calculations will be pointed out when we come to that part of our subject. Any line drawn perpendicularly from the tangent to the curve, such as F H, is an "offset," but in the strict sense of the term the length of such a line has a maximum limit which must not be exceeded. This might be anticipated from what has been already stated in our articles on surveying with respect to the necessity for restricting the length of perpendiculars from the main or base lines of a survey within certain limits. Long lines can only be ranged when they are intended to form the sides of triangles, in which case their position and direction can be ascertained independently of the actual angle they may make with any other line. A glance at the diagram in Fig. 1 will point out that the slightest error made in the angle D F H—that is, in setting out F H truly perpendicular to the tangent D B—will be very considerably magnified at the termination of the line at H, thus giving an increased error in the position of that point. Obviously the longer the line F H is made, the greater the liability to error. To proceed to the description of the various methods in use of laying out curves, it may be laid down as a general rule that "all methods in which the springing points are assumed, instead of being determined by the proper observations and calculations, are inaccurate;" in other words, they will not answer for railway or any other kind of work where the curves must be got in with precision. It will be seen that the offset method owes its inaccuracy to this circumstance, although there are causes as well which contribute to render it unsuitable for any but a very rough kind of laying out. The determination of the springings of a curve is indispensable to its proper delineation either on the ground or on the plan. When the method by offsets is employed the required points in the curve are sometimes obtained by measuring the offsets from the tangents, such as F H in Fig. 1, but more frequently by a different process, which is represented in Fig. 2. In this case the springings are supposed to be obtained from the map or plan instead of being determined in the proper manner, which will be subsequently investigated. It is manifest that it is quite impossible to fix these points to any degree of accuracy exceeding five or six feet by taking them from plans which are not drawn on a greater scale than six inches to a mile, and frequently only on one of four. There are certain instances, however, in which this rough-and-ready method may be used to some advantage. These will be pointed out in their proper place.

FIG. 1

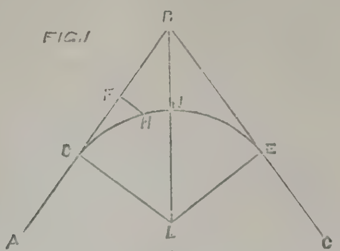
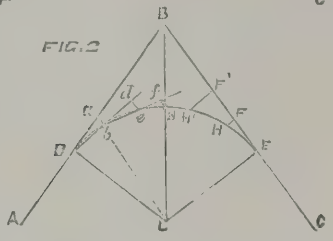


FIG. 2



In Fig. 2 are represented the two ordinary methods of laying out curves by offsets, and they will be sufficient to demonstrate the principle involved in the others as well. To begin with the left-hand side of the diagram, the springing point D is either assumed or taken as nearly correct as can be from the plan. Let the points in the curve be supposed to be one statute chain or 60ft. apart; then D*b*, *be*, *e*N each equal one chain and are also nearly equal to the lines D*a*, *bd*, *ef*, which are the lines measured in the ground. We will first briefly describe the actual fieldwork and then show how the offsets are obtained by calculation. From D, a line is ranged in the direction of a prolongation of the original straight line A D towards B, but it is only ranged far enough to measure off on it the line D *a*. An arrow or pin is placed at the point *a*, and while the chainman holds one end of the chain at D, the surveyor takes the other in one hand and holds with the other the offset staff at a point which gives the value of *a b*, the calculated offset for the point *b* in the curve. An assistant holds the end of the offset staff at the pin *a*, and the surveyor then pulls the chain all-taut, and at its junction with the correct distance on the staff, puts in a pin to mark the point *b*. A line is then ranged from D through *b* ; the distance of one chain *b d* laid off, and the offset *d e* measured as before, and so on, until the whole curve is completed. The proof of the accuracy of the whole operation is that the last offset should close upon the other assumed springing E, a proof that is never obtained, not even after the curve has been traced several times over again. To attempt to get in a long curve accurately by this method is merely a waste of time. In order to calculate the offsets it is necessary to know the radius of the curve, which is always a given quantity. Cases do now and then occur in railway laying-out where it is required to make the line pass through certain points by a curve, the radius of which has to be determined. This becomes, then, a regular bit of trigonometrical fieldwork, which the skill of the engineer or surveyor must accomplish, a consideration of which is beside our present purpose. But, to proceed with our calculations. Let R equal the radius of the curve ; D the distance in feet the points along the measured lines are to be apart, and S_1 and S_2 the offsets *a b*, *d e*, &c. A distinction must be made between the first offsets next the springings and the intermediate, as, for reasons which will be apparent, the intermediate ones are double the first. Referring to Fig. 2, produce *a b*, to meet the centre of the curve at L, then $(a\,L)^2 = (L\,D^2 + (D\,a)^2)$. But $a\,L = a\,b + b\,L = S_1 + R$; $L\,D = R$ and $D\,a = D$. Substituting these values in the equation, we obtain $(S_1 + R)^2 = R^2 + D^2$. Expanding the quantity within the bracket, we have

$S_1^2 + 2R\,S_1 + R^2 = R^2 + D^2$; or $S_1^2 + 2\,R\,S_1 = D^2$. But as S_1 is very small compared with R_1 its square may be neglected so far as its practical utility is concerned, and the value of the first offset becomes $S_1 = \frac{D^2}{2\,R}$. If the value of S_1 be required very accurately it may be readily ascertained by taking the square root of each side of the original equation, and writing $S_1 = \sqrt{R^2 + D^2} - R$. This latter formula should be used when the distance is equal to or greater than $\frac{R}{18}$. For the value of the intermediate offsets, equal to S_2, by the property of similar triangles $D\,a : D\,d :: a\,b : d\,e$; from which $S_2 = 2\ S_1$.

Referring now to the right of Fig. 2, it will be seen that the offsets, instead of being measured off from lines ranged consecutively through the points already determined in the curve, are all measured from the same line, which is the prolongation of the original straight line E C, already described as the "tangent." The value of the first offset F H (see Fig. 2) is given by the same formula which determines *a b*, but $F^1\ H^1$ is obtained in a different manner. The law of the second and succeeding offsets being double the first no longer holds, but each successive offset exceeds the preceding one in the proportion of the square of the distance. The first offset is F H = $\frac{D^2}{2\ R}$. The next $F^1\ H^1$, at a distance D^1 will be to F H as follows:—

$$F^1\,H^1 : F\,H :: D^1 : D.$$

But $D^1 = 2\,D$; so that the equation may be put $S_2 : S_1 :: (2\,D)^2 : D^2$; or $S_2 : S_1 :: 4\,D^2 : D^2$. Equating, we have $S\,2 = \frac{S_1 \times 4\,D^2}{D^2} = \frac{D^2}{2\,R} \times \frac{4\,D^2}{D^2} = \frac{2\,D^2}{R} = 4\,S_1$. From this it is readily perceived that the values of the successive offsets follow the law of the squares of the numbers 2, 3, 4, and so on. Both these methods fail to give accurate results, for many reasons. Firstly, there is no check upon any of the points in the curve, and errors may continue increasing until the surveyor is literally "lost" in the field. Secondly, the number of lines employed, and the incessant shifting of their direction, favours mistakes to an alarming degree. Thirdly, a very small error incurred at starting is perpetuated throughout the whole curve. The method shown on the right of Fig. 2 is free from the chances of error arising from continually changing the direction of the lines, but, on the other hand, it is only susceptible of a very limited application, as the length of the offsets very soon becomes too great to lay off with accuracy, and instead of one several tangents must be introduced to keep them within reasonable limits. Still, there are some exceptional instances where either, especially the first, of these methods may be used advantageously. We must reserve for another article the description of these.

◆

STONE SAWING.

THE softer varieties of stone admit of being cut into slabs and smaller pieces with toothed saws, which are sometimes made of a similar form to the cross-cutting saws for wood with upright teeth; but the toothed saws for soft stone are generally made somewhat wider in the middle than those for wood, so as to make the blade more rounding in the direction of its length, and, instead of being reciprocated backwards and forwards nearly in a horizontal line, as for cross-cutting wood, the toothed saws for stone are used with a swinging stroke, so as to act upon only a moderate portion of the length of the cut at the one instant of time; this is done to reduce the labour, and give the saw-teeth more penetration. Some of these very soft stones are worked with chisels and gouges similar to those of the carpenter, and they may even be worked into mouldings with planes like those for hard wood, but this is not generally practised.

Slate is sawn and sometimes planed with cutting tools, very similar to those used for wood, except that they are stronger and applied by machinery, the action being partly cutting and partly forcing off the flakes of slate, as, if the tools are allowed merely to scrape over the surface, their edges become rapidly worn away. But the various sandstones, limestones, and marbles are too compact to be thus treated, and they are consequently worked almost exclusively by the chipping-chisel and various abrasive processes; the chisel being used for such parts of the material as are in excess, as in sculptured works, and the abrasive process being employed for dividing the blocks into slabs and small pieces, which are subsequently ground to the required forms with sand and water. In the case of marble, the pieces are finally polished with abrasive powders applied on rubbers of various materials.

The ordinary saw, used in dividing blocks of stone and marble into flat slabs, consists of a parallel blade of soft iron from five to ten feet long, from four to five inches wide, and from one-eighth to one-sixth of an inch thick; the blade is perforated near each end with a hole about three-quarters of an inch in diameter, for the reception of an iron pin, by which the saw is strained in a rectangular wooden frame. The blade is inserted in the saw kerfs in the upright sides of the frame, called the heads, and the pins rest in two notches near the lower extremities of the heads, which serve as the handles of the saw, and are kept distended by the wooden stretcher called the pole, placed about a foot from the upper ends of the heads, and rested at each end against a loose block of wood called the bolster.

Instead of a coil of string twisted with a short lever being employed for drawing the upper ends of the frame together, as in the saws for wood, this object is effected by the use of a kind of chain made of looped iron rods, with intermediate C-shaped links, for adjusting the total length of the chain, which is furnished with iron loops that embrace the upper ends of the heads. The tension is given by a right and left hand-screw fitted to two looped nuts attached to the iron rod by C links; the double screw has holes for a lever, by which it is twisted so as to draw the upper ends of the heads of the frame together with great force, and thereby stretch the saw in a most effectual manner.

The depth to which the saw can penetrate is limited by the distance from the edge of the blade to the under side of the pole; the nearer the pole is to the saw, the greater is the stability of the blade, and all the parts of the frame are made detached, so as to allow of their being combined and adjusted to suit the different sizes of blocks of stone. The same pair of heads are used with poles and saws of various lengths, and the pole is placed at different heights from the blade, according to the depths of the blocks of stone. When the latter are very deep, a longer pair of heads are substituted, but long heads are avoided as much as possible, as the stability of the saw-frame is thereby much reduced.

The blade of the stone saw, like the metal laps used for grinding generally, does not itself cut the stone, but simply serves as a vehicle for the application of the sand, which acts as the teeth of the saw, and performs the cutting process. The coarseness of the sand that is employed depends upon the hardness of the stone to be cut; for moderately soft stone a coarse sharp sand is employed, and for the harder varieties of marble a fine sand is used; the sand or grit generally employed for cutting stone is obtained from the scrapings of roads paved with flint. The scrapings are sifted through perforated copper sieves, much the same as emery, as it is of great importance that the sand should be clean and free from small pieces of stone, or any other extraneous matters. Should a small piece of wood or a bit of coarse gravel by any accident get into the kerf beneath the saw blade, the little piece would roll over backwards and forwards, and materially impede the cutting of the block, and it then becomes necessary to remove the saw and wash away the obstacle, by pouring water down the saw kerf.

The cutting action of the sand is assisted by a small stream of water, supplied from a barrel placed a little above the block of stone. A small hole is made near the bottom of the barrel, to which is fitted a spigot and faucet, or more commonly a loose wooden peg grooved up the one side, which allows of the escape of a minute stream of water, that trickles down a sloping board placed so as to lead the water into the saw kerf. A little heap of sand is placed near the path of the water, and the workman is provided with a wooden stick with an iron hook at the end, or more commonly an old knife-blade placed at right angles to the stick near its end. This tool is called a *drip-stick*, and is used occasionally to draw forward a small quantity of sand into the running water, which thus carries down the necessary supply of sand for the cut, and the water flows away at the ends of the kerf, carrying with it the worn-out sand and the particles of stone removed in the cutting; the drip-stick is also used for tapping the wooden peg, so as to increase or diminish the flow of water according to circumstances.

The weight of the saw and frame supplies the necessary pressure for causing the penetration of the sand, so that the workman has only to guide the saw, and push it backwards and forwards for the cut, and when the pressure is so great as to render the work too laborious, a counterpoise weight is hung from a pulley placed over the saw frame, to which a cord is attaced, so as to reduce the pressure to the required amount. Under this arrangement, the saw works more easily, but it does not cut so rapidly.

For marking upon the block of stone or marble the lines upon which it is to be sawn, as for cutting it into slabs of 1in. or 2in. in thickness, the block is first shifted upon rollers into the position in which it is to be sawn; it is then mounted upon square pieces of wood called skids, with that side of the block upwards which is to constitute the edges of the desired slabs; and, as the blocks are frequently of very irregular forms, it is necessary to make one line around the top and two ends of the block to serve as the basis from which the other lines are set off, much the same as in setting out round timber.

The position of the first line having been determined, so as to allow of the greatest number of parallel slabs being cut from the block, two marks are made on the top of the stone close to the ends, with a piece of soft black slate found amongst coal, and called black; a line is then drawn, under the guidance of a straight edge, to connect these two marks, and the line is continued down one end, also with the straight edge. An equal distance is then set off at the bottom of the opposite end, and a line is drawn to serve as a temporary guide; two straight edges, each from 2ft. to 3ft. longer than the depth of the block, are applied to the two end lines, and the workman looks along the line of the two straight edges, to see if they are parallel to each other, or out of winding, in much the same manner as in the winding sticks to narrow works in wood, except that for setting out the blocks of stone, the straight edges are placed perpendicular instead of horizontal. Should the straight edges not appear parallel to each other the one at the second end of the stone is shifted at the bottom until the two straight edges are in one plane; the permanent line at the second end of the block is then drawn in the corrected position of the straight edge, and if the work has been correctly performed, all three lines will be in the same plane. The thicknesses of the required slabs are then gauged off from this foundation line, and the lines on the top are chased, or cut in about ⅛in. deep with a narrow chisel, to form a groove in which the edge of the saw is placed for the commencement of the cut. The end lines are also chased, as the water and sand would wash out the black lines.

Before commencing the sawing, the workman examines with a plumb line whether the end lines are vertical, and if not, wedges are driven under one side of the block, to bring the end lines exactly upright; the saw is then inserted in the groove, and the sawing is proceeded with, care being taken in the first entry to keep the saw quite upright, which is greatly assisted by the height of the saw-frame. Should the saw make the cut a little oblique to the lines, the position of the saw is slightly twisted in the saw-kerfs of the wooden heads, by blows of a hammer applied on one side of the pins which retain the blade in the frame, and which causes the saw to cut in the reverse direction. The necessity for changing the direction of the cut is, however, avoided as much as possible, as it makes the surface of the slabs irregular from the hollows thus produced. The necessity for grinding out these much increases the labour of producing a flat surface on the slabs, and the thickness of which is also lessened; this it is sometimes an important object to avoid with valuable marbles, which are occasionally cut into veneers for inlaying, which do not exceed ⅛in. in thickness.

The length of the traverse of the saw is generally about 20in., and a saw is therefore chosen that is about 2ft. longer than the block to be cut, as the shorter the saw that can be efficiently used the more firmly the blade is held. When two small blocks are to be cut, they are frequently placed end to end with the intended cuts in the same plane; and to prevent the sand and water, called the *feed*, from flowing out between the stones, the interval is filled up with straw rammed in firmly between the two blocks; in the case of light-coloured marbles, clean shavings are used for this purpose, as the straw would stain the surfaces unless the slabs were washed immediately afterwards.

After the marble has been cut into slabs with the stone saw, if it is required to be reduced into smaller pieces, or narrow slips, such as shelves, or the sides of chimney-pieces, the slab is laid on a bench, having a flat surface of hard stone, or marble, called a rubbing-bed. The lines indicating the margins of the required pieces are marked with the straight edge and black lead, and the lines are chased with a narrow chisel, as for the entry of the stone saw, but the cutting is effected with smaller blades, called grub saws; they consist of plates of iron from 1-20in. to 1-10in. thick, from 6in. to 4ft. long, and 6in. to 8in. wide when new. These blades are not stretched in a frame, but are stiffened by having their upper edges clamped between two pieces of wood extending their whole length, and measuring about 2in. wide and 1in. thick, the whole being held together by means of ordinary wood screws, passing through holes in the plate, so as to form a wooden back something like those of the dovetail saws, and which serves as the handle by which the grub saw is used.

The blade should always be shorter than the length of the cut to be made, as should the blade be longer than the cut, it would be worn hollow from the greater amount of rubbing to which the middle would be exposed; but when the grub saw is much shorter than the cut, it is liable to be worn rounding in its length. To counteract this tendency, the grub saws are sometimes filed, at every four or five inches, with angular notches about ¾in. deep, and which also allow the feed, or the sand and water, to reach the bottom of the cut with greater facility, and the grub saws are consequently considered to cut rather faster for the notches.

The width of the iron blade measured to the wooden back limits the depth of the cut to which the grub saw can be applied, and, in selecting a saw for any particular piece of stone, preference is given to as narrow a blade as can be fairly applied to that thickness, as, when the blade is wide, it is rather feeble sideways, and it is, besides, more liable to be twisted from the perpendicular when rubbed backwards and forwards in the cut with one or both hands applied on the back of the saw near the middle of its length.—*From* Byrne's *Handbook to the Artisan.*

◆

THE UTILISATION OF SEWAGE.

Proceedings at the British Association.

On Monday a report of a committee appointed at the last meeting of the Association at Exeter to inquire into the treatment and utilisation of sewage throughout the kingdom was read. The committee originated from the mechanical, statistical, and chemical sections, and the report had been previously read in the former section. An abstract of the report has already been given. An appendix was added by Mr. Hope giving an interesting account of the irrigation processes on the Brittain's farm, near Romford, the ultimate success of which the results already arrived at would seem to indicate. Although the works have only been in operation about a twelvemonth, a comparison between the crops grown on the irrigated ground and those grown on adjoining ground not irrigated shows results highly favourable to the former.—Professor Caurfield then gave a synopsis of a publication he had prepared, and which is to be published shortly by order of the Association, giving a digest of the present state of knowledge on sewage matters. In this digest he stated that he had given a sort of natural history of the methods taken in the treatment of refuse matter from human habitations. One of the methods treated of was that of precipitation, and he had come to the conclusion that it was impossible to solve the difficulty by that method, for the simple reason that the matter which they wanted to remove *par excellence*—ammonia—could not be precipitated. There was then the system of the treatment of the sewage by filtration and irrigation, and a chapter was devoted to the public health question of irrigation. It was, he said, perfectly well shown that sewage farms could be made a nuisance, but it was also very clearly shown that no nuisance need exist—(hear, hear)—especially if the sewage was filtrated. With regard to its effect on public health, it was found that, where sewage farming had been carried on, where the ground was really a water meadow, intermittent fever was caused; but it was also shown that intermittent fever was caused in the vicinity of farms where the water did not contain any sewage. This was the case in Milan and other places, but in this country there was no evidence whatever that intermittent fever had been produced, even where the ground was covered with water like a marsh; and the conclusion he came to was that sewage farms, if they were not actually a marsh or badly farmed, had no chance of producing intermittent fever. With regard to cholera, the evidence from Milan was, that on several occasions, whilst there had been cholera in Milan itself, there had not been a single case on the sewage farms; and, as to typhoid fever, it was perfectly well-known that sewage farms had not the smallest influence with the spread of that class of disease. He then read the report of an analysis made by Dr. Russell of sewer gases as bearing upon the public health. The experiments upon which the report was based found the quantity of oxygen very little diminished, whilst the carbonic acid was not increased to any extraordinary extent, there being plenty of rooms the air of which contained much more than was found in the samples of gas exhibited. The report concluded by stating that the experiments, as a whole, must be taken to indicate purer air than might have been anticipated, notwithstanding the samples were taken during the hottest part of the summer.

A report as to the probability of entozoic diseases being propagated by sewage irrigation was next read by Professor Caurfield. The report stated that, with the view of carrying out the experiments which it was thought desirable should be instituted, three families of guinea pigs, of four members each, were purchased. One member of each family was examined, but no sign of any entozoic disease was found either in the viscera or the muscles. The three survivors of one family were now being fed on sewage produce only, and those of the other two families on unsewage produce only. It was proposed, however, to feed the last with an occasional meal containing the larva or ova found on the sewage vegetables, or, failing that, taken from the sewage itself. The animals would be killed and examined, and it was hoped that some result might be obtained even from preliminary experiments upon so small a scale. They intended, however, instituting experiments on a much larger scale.

Mr. Grantham said these experiments were being made to allay any apprehension that might arise of any danger from the products of the sewage farms. In addition to what Professor Caurfield had told them, he should mention that the roots and grasses grown on the farm were also submitted to microscopical observation, and nothing was found which was at all injurious.

The President said he might congratulate the Association, and the section in particular, on receiving these reports. They had, he believed for the first time, a committee formed of engineers and chemists to work out the subject really scientifically, and he thought the results they had in a few months obtained were most interesting. They might look forward next year to some further enumeration of these most important results.

Dr. Paul (London) said he wished to make a personal statement. He understood the report which had been placed before them purported to be a report of the British Association appointed at Exeter. That committee consisted of six members, but of these three, or at least two, had taken no part in its production. For his own part, he desired to disclaim any participation or responsibility, and in doing so he believed he represented the opinions and feelings of one-half of the committee. He complained of the action of the committee in asking from sources outside of the Association for money to enable them to carry out the inquiry as tending to deprive the action of the committee of that independent and authoritative air which should exist in an inquiry of this nature, which interested so many people throughout the country. He entirely disapproved of the course taken by the committee, because he considered it inconsistent with the engagement and pledges into which they voluntarily entered.

The President read the names of the committee, but no discussion arose on Dr. Paul's objection, and the business of the section was proceeded with.

Mr. David Forbes, F.R.S. (London), being then called upon to read his paper on "The Utilisation of Sewage," with special reference to the phosphate process, he said that since the adoption in this country of water as a means for carrying off the excreta in towns, the difficulties of dealing with the sewage question had increased. As all the water, except what was carried off by evaporation, must by its own gravitation find its way ultimately to the sea or sink into the ground to pollute the wells and springs around, and since there was no likelihood of the employment of water being discontinued, there remained no remedy but to look the difficulty in the face and attempt to overcome it by devising some methods—for he had confidence that no one system would be found applicable to all local circumstances—by which the sewage might be prevented from being, as it was at present, not only a nuisance, but a source of danger to the inhabitants around. It was, he thought, generally acknowledged that the required purification of the effluent water could not be effected by a purely mechanical system, and sewage irrigation, which was classed as one of the mechanical systems, left nothing to be desired, provided only that the local circumstances were favourable. It had, however, its drawbacks; and there were numerous places where it did not appear either to be applicable or advantageous. Sewage water could not but taint the surrounding air, especially with a stiff soil, the smell in some cases being so offensive that the inhabitants in the neighbourhood would not submit to it. It was also stated that sewage irrigation was not suitable for all crops; and, as far as experience went, to continue the sewage over the same land ultimately tended to produce a weakened vegetation, and proved that the limit was soon reached beyond which the application might be even positively injurious. Then the expense of machinery and land was enormous, and for the sewage of London alone no less than 60,000 acres of land would be required. They would agree with him, therefore, as to the importance of finding out a process which would at once deodorise and purify the sewage to such an extent that the liquid might run into the rivers without danger to health and animal life, and this without the necessity of erecting costly works for the transmission of the sewage to localities miles distant, where it was likely to taint the surrounding atmosphere on being distributed. There were several processes by which this was attempted, but these were admitted failures, chemically and commercially; and he wished to call attention to the entirely novel process in which phosphoric acid and lime water caused the solid parts to precipitate rapidly and leave a perfectly transparent water with so little perceptible taste that any persons might drink it provided they could banish from their minds the filthy source from which it came. Mr. Forbes then proceeded to show the action of the phosphate on a quantity of sewage, and said that in this process it was only attempted to take so much of the solid matter from the sewage as to leave the water in a condition sufficiently pure to be innoxious to health. This, he submitted, was the case under his proposed system of purification; and he believed it would eventually prove most valuable in such localities as were found unsuitable for sewage irrigation.

Mr. Hope (Brittain's Farm) rose to defend the application of liquid manure. He said the misfortune had been from the earliest times that the engineers had disregarded the chemical side of the question, and the chemists that of the engineers, and it was only by keeping both in view that any satisfactory results could be obtained. Mr. Forbes's idea about smell had no foundation in fact, and if a nuisance arose from irrigation in this respect it was owing to mismanagement.

Professor Voelcker said his opinion was that the land was the only proper medium which would effectually complete the deodorisation of sewage; but the land, he added, should be in a condition fit to receive the sewage. Unfortunately there were comparatively few soils in a condition to absorb the liquid. In some places great inconvenience was felt in consequence of the stiffness of the soil; and so great was this sometimes felt that he believed means would have to be adopted before the sewage was put on the land, to remove, at any rate, the suspended matters, which were the great source of inconvenience, and which caused disagreeable smells and bad gases.

Professor Gilbert said he quite agreed with what Dr. Williamson said the other day, that no process was known to chemists which would enable them to remove the useful matters by precipitation, and give them a material commensurate with the cost of its production. He had heard that morning that the process of precipitation had been abandoned in the two towns where it had been in operation—Leamington and Hastings; and the result of ten years' close experience on the subject led him more and more to the conclusion that where they had large populations water was the only mode of cleansing (applause). If they had water, irrigation was the only mode of deodorising and purification.

Dr. Holland denied that irrigation had proved a nuisance, or plluted springs any more than solid manure. If it turned out a nuisance in any particular place, that was owing to bad management. He also denied the allegation that entozoic diseases were spread by means of its influence. The manure, he said, went to the roots of the crops and not to that part above the ground; and he pointed to Scotland, where the process in some places was carried on, as a proof that these diseases were not propagated by irrigation, as it was not likely that the Scotch, who are known as "canny" people, would continue the process if it was found to injure the cattle that fed upon the sewage products.

Professor Huxley, who entered the room during the discussion, was requested by the president to afford to the section an expression of his opinion on the subject. He said he had flattered himself that he could make sure of having nothing to do but listen, but the interesting discussion that had been going on had drifted very oddly into a province of which it was his business to know something; and, without wishing for a moment to deny the accuracy of what the last speaker said, he ventured to suggest the necessity of a little caution about one's conclusions upon the matter. Nothing could seem more entirely plausible than the arguments put before them so well, for it would certainly be a very remarkable circumstance if eggs of any sort could creep from the roots of plants to their foliage; but he thought the speaker did not reckon upon that wonderful series of changes of form which those animals living in cattle and causing their destruction were capable of undergoing. They must recollect that the alternative they had to deal with here was not the egg of a parasitical worm, but a greater or less number of intermediate conditions in which the animal was capable of living, totally different from those in which the parasite existed. Dr. Holland would be perfectly familar with one of the most fatal entozoic diseases among cattle—the staggers in sheep. These were caused by the presence of a large entozoic which was developed in the brain of the sheep. If they took the brain of the sheep which had died of this disease, and fed a dog with it, the bladder-worm which caused the apoplexy in the sheep suddenly became metamorphosed into a kind of tapeworm which developed with great rapidity in the interior of the dog. This eventually passed through the dog upon the pastures upon which the sheep were feeding; and if there be one of those infinitesimally small ova raised by the dust and carried upon the leaves, certain it was that by one or other of these channels the ova got back into the sheep, and gave rise to the staggers. Therefore, although no doubt many of the arguments used by Dr. Holland were largely applicable, they must look at the history of each of these cattle parasites with the same care and knowledge as they now had of the staggers worm before they could be so sure as he seemed to be that parasites could not be transmitted in this way. He merely put forward this as a caution.

Some further discussion followed, in the course of which several speakers advocated the ashpit system in preference to the water-closet system of removing the refuse, Mr. Alderman Rumney expressing the opinion that the committee had in their researches been biassed to the wet system. There had not, he said, been the slightest reference made to Manchester or Hull, where the dry system had been carried out most beneficially. In Hull the death rate had decreased from thirty-two to twenty-three, and this was attributed to the dry system. The discussion on this subject was not brought to a close till about twenty minutes to three, and then a general wish was expressed that it should be continued on another day. The president said it would come before the statistical section, when an opportunity would perhaps be afforded for its further ventilation.

◆

THE RETIREMENT OF MR. PENNETHORNE.

THE honour of knighthood is about to be conferred on Mr. Pennethorne, on his resignation of the office of architect in charge of the Land Revenues of the Crown in London, or as it is more usually called, the Surveyorship to the Woods and Forests. This appointment has been held by Mr. Pennethorne for many years, in conjunction with that of Architect and Surveyor to the office of Works and Public Buildings. The latter office was, it will be remembered, abolished by Mr. Layard. Mr. Pennethorne is said to have felt it impossible to retain the Surveyorship after his unceremonious dismissal from his other post, and hence his resignation. He will be succeeded by Mr. Arthur Cates, who has long been accustomed to the work from his private connection with Mr. Pennethorne. Mr. Cates is the son of the late Mr. Cates, of the British Museum library, and is well known to the profession and the public as the indefatigable secretary of the Architectural Publication Society, and as the architect of the new front recently added to the Turkish Baths, in Jermyn-street, the fine buildings for Attenborough, in Piccadilly, and other works.

◆

ARCHITECTURAL AND ARCHÆOLOGICAL SOCIETIES.

Archæology in Yorkshire.—The Architectural and Archæological Society of Durham and Northumberland made its annual excursion and held its fourth annual meeting in North Yorkshire on Thursday week and Friday. The meeting place was Coxwold. The first object visited was the old church of the Fauconbergs, at Coxwold (S. Michael), once attached to the Abbey of Byland. Here the magnificent monuments of the Fauconberg family were inspected. The party afterwards saw "Shandy Hall," once the residence of Laurence Sterne. After a view of the restored Priory of Newburgh (Sir George O. Wombwell's seat), the association proceeded, in carriages, to the ruins of Cistercian Byland, where, by permission of Major Stapylton, free access was given to all parts of the ruin. The Rev. J. F. Hodgson recited the history of the monastery and minutely described the various architectural features. The carriages were then resumed, and the famous Wass Bank was ascended to the tableland of the Hambleton Moors. The party visited Scawton Church, which has interesting Norman work, and then descended the glen to the scene of Turner's picture, Rievaulx-bridge, where a grand view of the famous Cistercian ruins, in some respects the most beautiful in England, is obtained. The ruins themselves were visited, and their beauties and interest pointed out by Mr. Hodgson, as at Byland. The ascent was then made to Lord Feversham's private grounds on the "Terrace," and thence the party proceeded to Helmsley and took up their head-quarters at Cowen's Hotel. The newly-restored, almost rebuilt, church of All Saints at Helmsley was examined, and the unnecessary destruction of the ancient features during the so-called "restoration" was much deplored. The society learnt with regret that many interesting specimens of Anglo-Saxon sculptured work had been broken up and built into the walls. On Friday, the association drove to Appleton-le-street, near Malton (Rev. C. P. Peach), to inspect the interesting 11th century tower, and thence to Barton, to view the interesting Roman sculptures of the old church, now being rebuilt into the new one. Slingsby, Hovingham, and Stonegrave Churches were next taken, and, lastly, Gilling Church and Castle, where, by the kindness of Mr. C. G. Fairfax, the finest 16th century room in Yorkshire, with its heraldic treasures, was inspected. After two days of enjoyment the numerous party proceeded to the North by the last train.

Architectural Society of the Archdeaconry of Northampton.—On Tuesday, Oct. 4, the members of this society will visit the churches of Grendon, Bozeat, Strixton, Easton Maudit, Castle Ashby, and Cogenho. A public meeting will also be held in the large room of the Religious and Useful Knowledge Society, Gold-street, Northampton, at 7.30 p.m., when the officers of the society will be elected, and the following papers will be read:—"On the Choral Arrangement of Churches," by the Rev. Owen Davys, Rector of Wheathampstead, Herts. "On the Connection of Architecture with Freemasonry; and on Masons' Marks," by the Rev. H. J. Bigge, Rector of Rockingham. Sir H. Dryden, Bart., will also give some remarks on "The Megalithic Monuments of Brittany."

Wiltshire Archæological and Natural History Society.—The seventeenth annual meeting of this society took place on Wednesday week, at Wilton, under the presidency of Mr. Charles Penruddocke, of Compton House. The general meeting was held at the Town-hall, for receiving the report and transacting the business of the society. The chair was taken by the President, who opened the meeting with an address. The Rev. D. Olivier read a paper on "Wilton Church," and Mr. William Ravenhill read another on "The trial and execution of Colonel Penruddocke at Exeter for high treason, A D. 1655." The visitors then proceeded to inspect Wilton Church and Wilton House, by the kind permission of Lady Herbert. At half-past five o'clock the anniversary dinner took place at the Pembroke Arms, and at eight o'clock a *conversazione* was held at the Town-hall, by invitation of the Mayor of Wilton. Mr. J. E. Nightingale read a paper on "Objects of interest in the excursion on the following day." The Rev. G. S. Master next read a paper on "Roman remains recently found at Holbury, near Dean," and some of the objects were exhibited. A paper was also read by the Rev. W. H. Jones, F.S.A., on "The ancient Wiltshire dykes." Mr. J. W. Singer, of Frome, exhibited his collection of mediæval jewellery. Thursday was devoted to excursions to Ferne, Wardour Castle, Tisbury Church, Place Farm, Fonthill Gifford Church, Fonthill Abbey, Fonthill House, Fonthill Bishop Church, Chilmark Church, and Compton House. On Friday the members visited the Salisbury and South Wilts and Blackmore Museums. A paper was read by the Rev. Canon Greenwell, F.S.A., on "Grime's Graves, and the evidence afforded by them of the quarrying of flint for the manufacture of implements during the Stone Period." A paper, illustrated by diagrams, was read by the Rev. W. C. Lukis, F.S.A., on "The lines of stones and circles of Carnac, in Brittany." A series of unpublished photographs of primæval antiquities, preserved in the British and Christy Museums, were exhibited. An excursion was afterwards made to Longford Castle, Britford Church, the Hospital of S. Nicholas, Salisbury, and Wilton.

◆

Building Intelligence.

CHURCHES AND CHAPELS.

Barnard Castle.—A new Unitarian Chapel was opened at Barnard Castle on Tuesday. It is constructed entirely of rough stone, with freestone facings, and is at the north end surmounted by a broach spire 70ft. in height. The ground plan comprises a nave about 35ft. by 24ft., inside the walls, and an aisle about 10ft. in width. The whole building is capable of seating 200 persons. The cost is estimated at between £1,200 and £1,300. Mr. W. Harrison, of Manchester, was the architect, and Mr. Donaldson, of Barnard Castle, the builder.

Cambridge.—The spire of the new church of All Saints, built opposite to Jesus College, is drawing to completion. It is about 190ft. from the ground. The perforations on the sides of this octagonal spire, with their canopies, and surrounding foliage from the college, from a most picturesque feature of this locality. The spire has been built up from the inside, to within a score feet of its summit, and now scaffolding is erected on the outside of the cone. Mr. Bodley, of London, is the architect in this instance; and Mr. Loveday the contractor.

Catton.—A two-light memorial window has been placed in the west end of the parish church at Catton. The execution was entrusted to Mr. Smiddy, of Malton. The subject of the window is "Christ healing the sick."

Jarrow.—On Monday afternoon the foundation stone of a new United Presbyterian Church was laid at Jarrow. The plan consists of a nave and two aisles, the rows of columns dividing the nave from the aisles being designed to support the galleries, nave arcading, clerestory wall, and nave roofing. The church, which is 82ft. long, and 54ft. wide, is designed in the Pointed style, and has a spire at the south-west angle 130ft. high. The front of the building has a bold gable 55ft. high to the apex, with a five-light traceried window. The building is intended to be built of stone, faced with material from the Tow Law Quarries, and with red stone from near Carlisle—red stone being also employed for the columns to the principal doors and windows of the front façade, Accommodation will be provided for over 900 adults. The architect for the building is Mr. Joseph John Lish, of Newcastle, and Mr. Wylam, of Jarrow, is the contractor. The contract for the whole work complete, including gas-lighting, heating, and boundary walling, being £3,170.

Leycett.—S. Saviour's Mission-Church, Leycett, has been opened. The style is Geometric Gothic. In form it is a Latin cross; the transverse limb and the lower limb being devoted to school purposes, except during service-time; the other to the chancel, organ-chamber, and vestry. Accommodation is provided for upwards of 300, but if necessary the building would hold some two or three hundred more. The architect is Mr. C. Lynam, of Stoke-upon-Trent.

New Churches in Yorkshire.—At the present time three new churches are nearly ready in the Malton district; one, the new church of S. Mary, at Thixendale, has been built and endowed at the cost of Sir Tatton Sykes, Bart. The present is the completion of the first work of the kind by the present baronet, and the consecration —which has been twice fixed and postponed—is expected in October. The foundation stone was laid by Sir Tatton on the 3rd of August, 1868. The church is from the designs of Mr. G. Edmund Street, A.R A., and is a very attractive Early English structure, consisting of chancel, nave, with south aisle and apsical baptistry at the west end. The new church provides accommodation for nearly 200 persons. There was a chapel at Thixendale at the time of the Commonwealth, but the only relic is the basin of the old Roman font. Sir Tatton has likewise pulled down the ancient church at Fimber on the Wolds, and on the site a new Early English church is just completing; this also is from the designs of Mr. Street. This work, too, is at the sole cost of the present baronet. The opening is expected in October. Sir Tatton has also placed the restoration of the ancient church at Weaverthorpe on the Wolds in the hands of Mr. Street. In the North Riding, at Barton-le-street, Mr. Meynell Ingram, of Temple Newsam, is re-building the parish church as a memorial of his late father. This was one of the most attractive of old churches to the antiquary, being full of exquisite Norman work, evidently the remains of a much earlier and much larger building. The new church is in the Norman style, and the architects, Messrs. Perkin and Son, of Leeds, are working into the new fabric the whole of the ancient sculpture of the old building. More than 300 richly carved old stones are used. The church will not be ready till 1871.

Restoration (!) of Wilby Church, Northamptonshire.—This beautiful church, illustrated by Brandon and in Wicke's "English Spires," is undergoing a course of whitewash, in the absence of the vicar, under the guidance of a zealous, but not very intelligent churchwarden. The chancel, west and nave arches, which are of iron-stone, and were cleaned of the accumulated whitewash of a century some years ago, are now made nice and clean by whitewash. The parishioners do not appreciate this improvement.

Sharrow Church, near Sheffield.—A small memorial window of two lights and tracery has been put in the south aisle, to the memory of the late Mrs. Parkin. It consists of a conventional arrangement of the passion flower and leaf, with monogram of deceased's name on rich ruby and blue ground. The window was executed by Mr. T. W. Camm, of Smethwick, to whom is entrusted the memorial window to be erected in the south transept to the late Mr. Whitehead, late warden.

Thetford.—S. Peter's Church, Thetford, was re-opened on the 6th inst. after restoration, which has been wholly confined to the interior. The floor of the sanctuary has been raised two steps and paved with Minton's tiles. The whole of the sittings are of varnished deal. The reredos, altar, and east window now form a perfect whole. The large and unsightly gallery still remains, however, but the want of funds is the only obstacle to its removal. The whole of the painted decorations have been executed from the designs of the architect by Messrs. King, of Norwich, the general contractors being Messrs. C. Bishop & Son, of Diss, and Mr. R. Cornish, of North Walsham. The architect employed was Mr. A. E. Browne, of Clifton Chambers, Lincoln's Inn-fields.

Ventnor.—The foundation stone has been laid of a new (Roman) Catholic Church at Ventnor. The plan consists of a spacious nave and chancel, with sacristy and porch, and the church will accommodate about 200 persons.

Wells.—The work of the few men now engaged on the restoration of the west front of Wells Cathedral is beginning to make a show, the different portions of the new work standing out brightly in relief against the time-darkened portion. The figures are not to be interfered with in any way whatever, but will remain as they now are, the only work done being the repair of the masonry of the fabric.

Windsor.—Mr. E. W. Kelly is restoring the parish church of Windsor under the direction of Mr. S. S. Teulon, of London. The flat plaster ceiling of the nave has been taken down, and a stained open-work roof substituted. The fronts of the galleries have been removed, and replaced by new stained deal framing, with open panels with cinquefoil tracery heads. The old windows, which were of cast-iron and of a very low character of design, have been removed throughout, and replaced by Bath stone tracery-headed windows of the Late Decorated style, glazed with cathedral glass in varied tints. There is one stained glass window by Heaton, Butler, & Bayne. The chancel is entirely new, and with the chancel arch forms a five-windowed apse, and is built of Heath stone, from the neighbourhood of Wickham, the windows and dressings being of Bath stone. The dado round the interior is of red Mansfield stone from Lindley. The panels behind the altar will be filled with mosaics of symbolical character, by Salviati. The lighting is by Hart, Peard, & Co., of Wych-street. The contract amounts to £4,160.

BUILDINGS.

Dorchester.—The new school buildings, built for the County of Dorset School Company, have just been finished. The façades are faced with white Poole bricks, relieved with red in bands and arches, with Bath stone dressings. The roofs are covered with slate. Mr. Gregory was the builder.

Hungerford.—The corner-stone of a new Town-hall and Corn Exchange, at Hungerford, on the borders of Berks and Wilts, was laid on Wednesday week. The building, which will be of stone and brick, will be erected in the Italian style of architecture, from a design by Mr. J. H. Money, architect, of Newbury.

Larne.—The formal opening of the new Town-hall took place on the 25th ult. The style of architecture is Gothic of a French character. On plan the new buildings comprise assembly-room, public reading-room, library and museum, board-room, kitchen, and caretaker's apartments, &c. The architect was Mr. Alexander Tate, C.E., F.R.I.A.I., county surveyor; Mr. Samuel P. Close, A.R.I.A.I., acting as clerk of the works. Messrs. Stewart & Co., Belfast, were the contractors. The cost of the building was £5,500.

New Poultry Market for the City of London. —After a lengthened discussion, the Court of Common Council decided on Thursday week to erect a new poultry market on the vacant land belonging to the Corporation on the west side of the new Meat Market, in Smithfield. The market will be erected from the designs of Mr. Horace Jones, F.R.I.B.A., the City Architect, at an estimated cost of £100,000.

Owens' College, Manchester.—The foundation stone of the new building about to be erected for this college in Oxford-road is to be laid to-day. The Duke of Devonshire and other members of the British Association are expected to take part in the proceedings.

Shoreditch.—Great alterations are proposed at Shoreditch Workhouse, Kingsland-road—a comparatively new building, having been erected, we think, about ten years ago. Among the works contemplated will be a new infirmary, and the total cost will be about £10,000. Mr. W. Lee, of Basinghall-street, is the architect.

The New Yorkshire Club House.—The new club adjoining Lendal Bridge, York, is completed, and was opened on Tuesday last. The edifice has been erected in accordance with the drawings and designs of Mr. C. J. Parnell, of Pall Mall, London, architect, and the entire superintendence has devolved upon Mr. W. Lewis, clerk of the works, Clarence-street, York. Messrs. Weatherley & Rymer, of York, have been the contractors. The entrance hall is paved with Minton's coloured tiles. The principal rooms are furnished by Messrs. Howard & Sons, of Bernard-street, Oxford-street, London.

Additional restorations, to the amount of £1,200, are about to be carried out at S. Sepulchre's Church, Nottingham, one of the four ancient round churches in this country. The chancel was rebuilt a few years ago by Mr. George Gilbert Scott, R.A., at a cost of £8,000.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

To Our Readers.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

Letters relating to advertisements and the ordinary business of the Paper should be addressed to the EDITOR, 31, TAVISTOCK STREET, COVENT GARDEN, W.C.

Advertisements for the current week must reach the office not later than 5 p.m on Thursday.

Received.—H. L., J. N. T. & Co., H. J. W., M. T. & Co., E. & J. L. M., W. B. H., F. P., J. & J. K., A. S. A., D. & E., W. C., W. Y., T. J. S., R. F H., T. W. C., B. D. & Co., J. H., T. W. W., Rev. E. K., A. C.

J. H. T.—The whole of Riddell's book on "Hand-Railing" will be reproduced in the Building News.

D. Grant.—Sketch will appear.

Davis & Emanuel.—Drawing of Synagogue received and in hand.

W. J. J.—The sketch of tower of Fulham church is altogether unsuitable.

T. W. C.—Your reply is an advertisement.

Wm. Bingley.—Sketch returned.

Myres, Veever & Myres.—Photographs of church received and returned.

J. H. A.—Can't promise without seeing sketch.

Henry Littler.—Drawing and plan received.

F. Waghorn.—Measured drawing on hinges may appear; can't say precisely.

J. H. P.—Trübner & Co., Paternoster-row, 21s.

Correspondence.

SENTIMENT IN BUILDING AND LAY AND CLERIC MEMORIALS IN EDINBURGH.

(*To the Editor of the* Building News.)

Sir,—While the romantic site of Edinburgh, and the towering irregular outlines of our lofty buildings require so little effort to give the pleasing effect so much admired, we still continue to waste many thousands of pounds in some obscure localities where plain building and more light and more air only are wanted. Costly stone and lime excrescences appear as if copies of some baronial reminiscences which have no historic worth, far less present or future utility, to any one. Allan Ramsay, addressing civic authority here a century ago, gives a hint as to city improvements when he says, with a feeling of principle now wanted—

> "Our reason and advantages call
> Us to preserve what we esteem,
> And each should contribute tho' small,
> Like silver rivulets that fall
> In one, and make a spreading stream.
> So should a city all her care unite,
> T' engage with entertainment of delight."

Now here we are, sober, sentimental Scotchmen of the period, striving with the imitative ability of the Chinese tailor (who so tastefully copied the patches on the old pattern into the new breeches), reproducing the stuck-to devices of the old builders into new tenements, with damaging effect to the comfort and means of workmen's families and shopmen who require accommodation.

Such is the distorted taste of the period that an effort has even been made to mar the present perfect symmetry of Charlotte-square, requiring the strong arms of the law to preserve the true Classic taste of our fathers. This noble square is well worthy of being chosen as the site of the grand Scottish Memorial to the late Prince Consort, but such is the questionable state of public taste that it is more than likely to share the fate of the Ross fountain—the finest work of art we have of the kind—having been placed in the worst possible position, under the cold shadow of the Castle, in the lowest ground of Princes-street-gardens, where in the same bleak locality a Winter Garden is planned out to be placed.

Many visitors to Edinburgh think that we build too much for posterity, and so saddle them with more cost in altering our notions in stone and lime, as we daily experience now. The Caledonian Railway Company certainly spent many thousands of pounds in clearing away substantial palatial buildings, which are only replaced by a wooden station, which a Yankee visitor said has a homely feeling about it. Near the same timber creation a further clearance of some few thousand pounds' worth of princely dwellings has been proposed, as a suitable site at the west end of Princes-street for the Prince Consort Memorial, while alongside that street there are at least two good sites—namely, opposite both Frederick-street and Castle-street, and, best of all, a most appropriate site, having the vista of Princes-street towards the east, placed upon the rock below the Nelson tower. In the same view we have that most symbolic of all Scotland's memorials—the unfinished national monument to her brave sons who fought, and bled, and died (during the time of the first Napoleon) in the strife to obtain the now waste-paper treaties of the past. The new and finished National Memorial to "The silent father of our kings to be" would tend, if placed on this site, to illustrate the triumph of peace over war.

It is proposed to have a statue of Chalmers in marble; far better that it should be in bronze and made to match those by Chantrey of George IV. and Pitt. As there is yet another site in our noble George-street requiring a statue, Chalmers's memorial should be placed at the intersection of Castle-street. We would then have a regal, lay, and cleric statue of the representative men of the last generation to adorn our finest thoroughfare. The genial heart and gentle hand of an "Old Mortality" is wanted here to clear the weather stains from the freestone and marble memorials of our lay and cleric worthies.—I am, &c.,

J. K.

FROM GLASGOW.

SIR,—In your correspondent's notice of the New Club in his "Gossip from Glasgow" (in your paper of the 16th inst.) Mr. Bryce's name was only mentioned as architect. It was a joint production; Mr. Bryce did the elevations and Mr. Burnet the plans, when erected as offices for the Scottish Widows Fund, but the alterations made necessary for a club were carried out by Mr. Burnet.—I am, &c.,

A READER.

Intercommunication.

QUESTIONS.

[1955] OPTICAL SQUARE.—Would any of your readers kindly inform me how to use efficaciously an optical square, for measuring winding or crooked buildings; also, how to prove that the above-mentioned instrument is correct?—B. J.

[1956] THE ARCHITECTURAL ASSOCIATION.—I should be glad if some of your readers would inform me what advantage a country assistant would derive by joining the Architectural Association.—ASSISTANT.

[1957] IRISH COUNTY SURVEYORSHIP.—In the competitive examination for two Irish county surveyorships held in Dublin last November, candidates were required to show that they had "been engaged in the practice of their profession on adequate works for a sufficient time, or have had in some other way satisfactory opportunities of becoming acquainted with the practice of their profession in some one of the branches indicated," which were four, the last one being "county works, including architecture, roads, drainage and river works." Can any one inform me if an architects' assistant having been engaged in the practice of architecture alone, but having a tolerable knowledge of roads, drainage, and river works from reading and observation, would be admitted to these examinations as an eligible candidate? Or if any one would tell me where the fountain-head is from whence I could obtain the desired information I should be much obliged.—LEX.

[1958] KENTISH RAG.—Would some of your correspondents inform me where Kentish ragstone is to be bought, and the price per foot cube; the size it can be had; if it can be cut with a saw like Bath stone, or if it requires more labour; whether mouldings can be worked on it; if it requires more labour than Bath; and if an ordinary mason can work it?—TRIANGLE.

[1959] POPLAR.—I should be glad to know for what poplar wood is used, if it will stand the weather, and the price per foot, super. or cube? I have heard it is used for railway blocks or brakes, but should like to know if it is correct.—TRIANGLE.

[1960] TAKING OUT COLOURED LINES.—In some plans, sent to me for alteration and revision, there are a number of red lines, drawn either in carmine or lake, which must be taken out. To erase them with a knife or ink eraser is not possible, as they run all over the plans, which would be quite destroyed by it. Can any draughtsman or other of your correspondents advise me what to do? I have applied to the only chemist in the town, but he does not know of any solution that will be of any good.—DESPERATION.

[1961] POST-OFFICE CLERKS.—I should be obliged for any information respecting the examinations, qualifications, and admission of youths to the above appointments. Are there any stated periods for the examinations, where are they held, and what chance is there of promotion?—PAFERFAMILIAS.

[1962] CALCULATION OF LOGARITHMS.—In a recent scientific examination the following question was put:—"Given the logarithm of 2, and the logarithm of 4, find the logarithm of 64." I was unable to answer it, and shall be glad if any of the contributors to "Intercommunication" will give me the key to the problem.—CANDIDATE.

[1963] JACK ARCHES.—The writer of the article "Underneath the Victoria Embankment" would very much oblige me if he would give in your next impression a sketch, showing the arrangement of the covering in of the Underground Railway, and the manner in which the girders are fixed.—SUBSCRIBER.

[1964] CAST-IRON.—Which is the best raw material for foundry purposes, the grey or the white metal, and which will run the most fluid into the mould?—SANDBOX.

[1965] PREPARING CANVAS FOR OIL-PAINTING.—Can any subscriber give me the recipe used by artists' colourmen for the composition used to coat canvas for oil-painting?—G. G.

[1966] SLATE CISTERN.—I have a large slate cistern which is splitting off in large flakes from the overlapping sides. Can I stop this, if so, how?—T. W. K.

[1967] PRICES FOR SAWING TIMBER.—Will some English subscriber oblige me with the present price paid for sawing beechwood?—K. D., Kansas.

[1968] BLACK JAPAN FOR COACH WORK.—Can any one tell me how to make a good black japan for coach work?—COACH-PAINTER.

[1969] BRAZING BAND SAWS.—Will some reader give me a little information on brazing band saws?—WOOD.

[1970] SOFTENING ASH TIMBER.—I have some ash timber 2ft. square, which I want to bend. Boiling or steaming does not soften it enough. Could I put anything in the water that would help me?—C. J. C.

REPLIES.

[1938] TURKISH BATHS.—Noticing some replies as to the above in your last issue I beg to inform your correspondent that Mr. Francis Drake, architect, Friar-lane, Leicester, has constructed a Turkish bath for me here, on the new principle of hot-air ventilation, used by Dr. Bolton. He made the plans for the Newcastle-on-Tyne Corporation Turkish Baths; also for the infirmary of that town and several private baths for gentlemen in that neighbourhood. He has also built Turkish baths, public and private, at Ryde, Isle of Wight, and a number of baths, public and private, in different parts of the country and would most likely be able to give your correspondent every information. He is the author of a pamphlet on the subject.—S. E. A., Hinckley.

[1939] COTTAGE HOSPITAL.—Buy Dr. Horace Swete's "Handy Book for Cottage Hospitals," published by him at Weston-super-Mare, for 3s. 6d.—A. B.

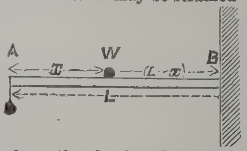
[1940] BREACH OF CONTRACT.—If "G. W." is wise he will let the matter rest. The understanding on his part is too indefinite to establish, and any attempt to do so will simply be putting money into the hands of legal men and taking it out of his pocket.—LEX.

[1942] REMOVING WHITEWASH.—From what your correspondent says, the whitewash appears to have almost eaten into the stone, and in that case it is a mere waste of labour and material to think of removing it by any solution or washing process. It has evidently penetrated through the "skin" of the stone, as it is technically termed. There is only one thorough remedy—have the stone redressed.—MASON.

[1943] WALL BUILDING.—It is the usual way in building hollow walls to build 9in. brickwork outside, 2½in. cavity, and 4½in. brickwork inside, the whole to be bound together with 12in. bricks, made specially for that purpose. I have seen walls of that description bound with iron ties made in the form of a S. Andrew's cross, with a rebate in the middle, and the ends turned down to lap over the bricks, but I like the long bricks best.—BRICKLAYER.

[1944] STRAW BARN.—1. Ascertain maximum number of acres sown. 2. Ascertain maximum yield of wheat per acre. 3. Allow 36ft. cube, for the straw and corn of every bushel of wheat grown. 4. Ditto for pease and beans. 5. Barley or rye require 27ft. cube. 6. Oats require 18ft. cube.—C. B.

[1947] STRENGTH OF CANTILEVERS.—There are three different ways in which a cantilever may be strained by loads in practice, and its strength may be easily calculated from the formula given below. Suppose, in the first place, that the weight W in the accompanying diagram is placed upon the cantilever, at a distance from the free end A, equal to x. Its distance from the fixed end, B, will therefore be $(L - x)$, putting L for the total length of the cantilever. This distance $(L - x)$ is clearly the leverage with which the weight W acts, tending to break the cantilever at B. Making S equal to the strain at B, and putting D for the depth of the cantilever, which is the dimension that resists the breaking tendency; then $S = \frac{W \times (L - x)}{D}$. If the weight be situated at A, the free end of the cantilever, then the leverage $(L - x)$ becomes equal to L, and S equals $\frac{W \times L}{D}$. But in the case put by "Young Builder," the load or weight is uniformly distributed over the cantilever. In this case, therefore, we may consider it to consist of a number of equal weights, placed close together, and acting at their common centre of gravity. The sum of the weights will therefore equal W, and the leverage, or distance of their centre of gravity from the fixed end B, will equal $\frac{L}{2}$. Consequently the strain will be given by the formula $S = \frac{W \times L}{2 \times D}$. This may be now applied to the case in question, put by "Young Builder." L = 18ft., D = 18in. = 1·5ft. Since the cantilevers are placed 6ft. apart, the total load will be equal to 6 × 18 × 120 = 5.8 tons, or allowing for the weight of the cantilever and the platform, it may be taken at 6 tons. Substituting this value, we find $S = \frac{6 \times 18}{2 \times 1{\cdot}5} = 36$ tons. If we assume the iron to stand a safe strain of 5 tons, there will be 7·2 square inches of metal required in the flanges, or to be on the safe side, let us say 8in. In the section given by "Young Builder" there are two angle irons 3in. × 3in × ⅜in., which will give only 4·5in., so that the cantilever is not strong enough. To make it so, all that is necessary is to rivet a plate to the top of the angle iron. This plate must have a number of square inches, equal to 8 − 4·5 = 3·5 square inches. Let the plate be 7in. broad, by ½in. thick, and it will answer the purpose.—STATICS.



[1948] LAYING OUT CURVES.—"Ranging Railway Curves," by W. D. Haskoll, C.E., published by Bradley Thomas Batsford, 52, High Holborn, is the best practical book on the subject.—R. D.

[1949] AREAS OF CIRCLES.—"Puzzled" will find a complete solution to his question in the *English Mechanic* for Sept. 16th, in an article on "Reciprocal Geometry," by J. Beverley Fenby, C.E.—FRANK CHESSELL.

LEGAL INTELLIGENCE.

NEW ROYALTY THEATRE.—On the 19th ult. an injunction was obtained to restrain Miss Hodson, the lessee of the New Royalty Theatre, Soho, from making certain alterations therein, with a view to increase the accommodation of the public. Mr. Welchman, the plaintiff, is the proprietor of adjoining house property, and he alleged that the projected improvements would obstruct the passage of light and air to his premises. On Thursday week the matter came on for special hearing, before Vice Chancellor Bacon, and the defendant denied the allegation on which the injunction was obtained. After arguments at considerable length by Mr. Roberts for the defendant, and Mr. Webb for the plaintiff, the Vice-Chancellor made an order to dissolve the injunction, the costs to be costs in the case. On Friday last the order was lodged in the Court of Chancery, and the improvements in the theatre, which have been delayed by the injunction, will now be completed.

SLUNN V. THE VESTRY OF SAINT MARY, LAMBETH.—In the Clerkenwell County Court, on the 17th inst., the plaintiff, a cab-proprietor, brought an action against the Vestry of the parish of S. Mary, Lambeth, for damages caused to a horse and hansom cab, through the negligence of the defendant's servants, in allowing a heap of siftings or shingle to remain in the centre of the carriage-way of the Waterloo-road, on the 20th of May last, without a light or railing round it, whereby the cab and horse were thrown over and severely damaged. The loss on the horse was £10, on the cab £5, and on the harness 11s., making the total amount claimed £15 11s. Evidence in support of the plaintiff's case having been given, it was argued by the counsel for the defendant that by Act of Parliament notice must be given to a public body before an action could be brought against it. His Honour the judge (Gordon Whitbread, Esq.), however, would not admit the objection, but said that the case must be tried on its merits. Evidence was then given for the defence, to show that there was a railing round the heap, but not a light, as it was not then dark. The judge, after hearing the evidence, said he was of opinion that there was not sufficient protection, considering it was half-past eight at night when the accident occurred. He must therefore give the verdict for the plaintiff for the amount claimed £15 11s., with costs.

WORKMAN'S WAGES. — IMPORTANT QUESTION. — Mr. David King, of the firm of King & Sons, of Mitre-street, Aldgate, was summoned on Wednesday before Sir Robert W. Carden, by Henry Noden, a mason, to show cause why he should not pay him £1 16s. 4d., wages due to him for work done. Henry Noden said that he was a mason, and on Tuesday week last he went to the office of Mr. King, in Gough-square, and asked for the foreman mason, to see if he could give him a job. He was told the foreman mason was on the works at the Jews' Synagogue in Sandys row, Bishopsgate. He went there and saw a man named Gibson, who was represented to him as the foreman. There was a board up on the hoarding stating that Messrs. King & Sons were the contractors. Gibson put him on to work at once, and he worked at the Synagogue for forty-eight hours, up to Friday night, and then Gibson sent him off to Austinfriars to work on another job of Mr. King's. When he went for his money to Mr. King's office, in Gough-square, on Saturday, Mr. King, junr., offered to pay him for his Saturday's work, provided he would sign an agreement that he would make no further claim upon King & Co. for wages due. He refused to do that, and then King & Co. refused to pay him anything. In cross-examination he stated Mr. King never employed him. He never asked for Mr. King when he applied for work; but he asked for the foreman, as it was customary for all men in the trade to do; but Mr. King was present in the office when he asked for the foreman, and was referred to the Synagogue in Sandys-row. The defence was that he was not employed by Mr. King, but by Gibson, who was not Mr. King's foreman as alleged, but his sub-contractor, and this was proved by the contract which was put in. After some further evidence, Sir Robt. W. Carden said that in the face of that contract the defendant had nothing to do with the complainant and his wages, and it was clearly against Gibson that the claim existed. He could not make any order, and must, therefore, leave the complainant to his remedy in the county court. He then dismissed the summons. Mr. Wetherfield, who appeared for Noden, said that would only necessitate 27 actions in the county court.

LAND AND BUILDING SOCIETIES.

London Labourers' Dwellings Society (Limited).—At the 18th half-yearly general meeting the usual dividend at the rate of 5 per cent. per annum, free of income tax, was declared. The number of tenements now belonging to the society is 378; the capital amounts to £43,100; the sinking fund (for the redemption of the leasehold property of the society) to £1,467, and the reserve fund (for the equalization of dividends or extraordinary expenses) to £4,093.

County of Southampton Provident Permanent Benefit Building Society.—The annual meeting of the County of Southampton Provident Permanent Benefit Building Society and Savings Fund was held on Tuesday week. The report of the directors announced continued satisfactory progress of the business of the society, the number of shares issued being considerably in excess of those issued in any preceding year. The liabilities and assets account had been carefully prepared, and the surplus profit of the past year was such that, after providing an ample guarantee fund, there remained for apportionment a bonus of £4 1s. 4d. per cent., in which the borrowers ratiably participated.

◆

STATUES, MEMORIALS, ETC.

York.—During the past week an important addition has been made to the adornment of S. Wilfrid's Catholic Church, York, by the erection of another statue. It is a noble figure, and the Archangel, S. Michael, is represented as on guard, resting his hands upon the hilt of his sword the point of which rests on the ground. His wings are represented as slightly expanded, and on his head is a crown surmounted in front by the cross. The figure is well proportioned, and the drapery is effective, and so contrived as to reveal the chest, right arm, and leg in armour. Like its companion statue of S. Joseph, it is the work of Mr. Boulton, of Cheltenham, from the design of Mr. George Goldie.

◆

WATER SUPPLY AND SANITARY MATTERS.

Birmingham.—The people of Birmingham are to be commiserated as regards one of the conditions under which they live at present. The *Lancet* states that according to Dr. Alfred Hill, the supply of water to the borough, when analysed by him on the 3rd August, was highly charged with nitrogenous organic matter, and was also turbid and bright green with minute vegetation. The sooner Birmingham puts its lately-acquired Act in force ror a new supply the better for the inhabitants.

"Jack Ketch's Warren."—At the last meeting of the Clerkenwell vestry, the clerk stated that, in conformity with the provisions of the Artizans' and Labourers' Dwellings Act, certain alterations had been effected in the alleys in Turnmill-street, known as "Jack Ketch's warren," and that the ventilation and drainage had been much improved.

Social Science Congress.—The question of the disposal of sewage will occupy a prominent place in the programme of the next meeting of the Social Science Congress. Sir Charles Adderley, who is president of the Sanitary Commission; Mr. R. Rawlinson, president of the Health Department: and Mr. Moule, inventor of the dry earth closet sysetm, will, it is expected, take part in the discussion on the subject. An account of the experiments made on the Aldershot Sewage Farm will be submitted by the superintendent to the criticism of the Congress; and all that is known on the subject will be fully ventilated.

Sanitary Supervision.—It is said to be intended by the Government to greatly increase the number of medical officers who are employed for the purposes of sanitary supervision under the Privy Council; in fact, the whole of the kingdom will be divided into sanitary districts, each under a medical officer, with a salary of not less than £600 per annum.

◆

Our Office Table.

◆

Variation in the "Styles" of Animal Architecture.—Human beings apparently are not alone in their alternate deterioration and improvement in the arts of construction. M. Pouchet, the Director of the Museum at Rouen, and a well-known naturalist, has discovered that the new school of swallows are improving their style of architecture, building their nests with more regard to sanitary principles, so as to contain more room and admit more light and air. The shape of the nest is, we infer, more nearly that which will include a maximum of inhabitable space; and besides this, and still more important, the entrance to it has been changed from a small round hole into a long slit, a sort of balcony, from which the young swallow may look out upon the world and breathe fresh air. What is more, the new school of swallow architects appear to prefer the new streets, while the old school still build the old nests on the cathedrals and older houses; perhaps from some sense of artistic fitness, which scruples at any change of style in adding extensions to monuments so venerable.

Monster Hotel.—On the 25th of August the doors of the Grand Central Hotel, situate on Broadway and facing Bond-street, New York, were thrown open for the first time. This immense hotel will accommodate 1,500 guests in its 650 rooms. Over 35,000 square feet are the superficial area of each floor, and the top floor surface dimensions of the interior amount to 350,000 square feet. There are two courts in the centre, 20ft. wide by 160, affording light and ventilation. These courts are bridged by the main hall on each floor. Fire-hose is conveniently located on every floor, while two large tanks, each holding 10,000 gallons of water, are situate on the top of the hotel. There are five staircases, two elevators, and scuttles to the roof. There are four entrances on Broadway, and two on Mercer-street. The building is heated by 30 miles of steam coil. The price of board for transient customers is 3 dols. to 3.50 dols. and 4 dols. per day, according to location of room, while permanent boarders are allowed a considerable reduction from these rates. In the statistics of the hotel we find the number of bricks, 4,000,000; cost of building and ground, 1,500,000 dols.; cost of furnishing, 500,000 dols.; water supply in tanks (in gallons) 20,000; number of chairs, 5,000; number of doors, 2,000; depth between Broadway and Mercer, 200ft.; height to top of flagstaff, 197ft.; length on Broadway, 175 ft.; number of halls, 50; carriages, 15; ceilings, average height, 12ft.; number of stories, 10; acres of carpeting, 7; steam-engines, 3; elevators, 2; acre of marble tiling, 1.

Heavy Surcharge on a Local Board.—Mr. William Roberts, district auditor for South-east Lancashire, has just finished his audits of the Accrington Local Board of Health and has made surcharges of £500 and £158 respectively on several members. The larger item is for money paid on account of a new police-station which has just been finished, and which the auditor held the Board had no power to build; the other item is expenditure incurred in opposing a bill in Parliament of the Accrington Gas and Water Company, with a view to obtain a reduction in the charges for gas and water. The Committee of the House of Commons decided that the Board had no *locus standi* on important points, and the auditor was of opinion that he could not pass the accounts, although a meeting of ratepayers had sanctioned what the Board did.

New Submarine Bridge at Stamboul.—From Constantinople it is stated that a project is mooted to join the city and its suburbs by a submarine bridge between Stamboul and Galata by the Golden Horn. The inventor is Mr. Haddn, the Government engineer. As it will not be possible, owing to the hydrographical and geological state of Constantinople, to traverse it by an ordinary tunnel, Mr. Haddn proposes to establish a tubular tunnel 34ft. below the surface of the water, in order to permit vessels of the largest tonnage to pass above it.

New City Hall, San Francisco, California.—The Commissioners who have in charge the erection of the new City Hall building at San Francisco, request the competing architects to send along with each design and plan the motto and the name of the author, with references, enclosed in a sealed envelope, addressed to the Board. It is the intention of the Commissioners to award the position of Superintending Architect to the author of the accepted plan, if he is, in their opinion, competent and otherwise acceptable. For the authorized notice to this effect parties interested will apply to Wells, Fargo, and Co., New York.

Repairing Leaky Roofs, Etc.—The following is said to answer well in mending roofs that leak, and for similar uses. Take two parts by weight of common pitch with one part of gutta-percha, melt together in an iron pot; it forms a homogeneous fluid much more manageable than gutta-percha alone. To repair gutters, roofs, or other surfaces, carefully clean out of the cracks all earthy matters, slightly warm the edges with a plumber's soldering iron, then pour the cement in a fluid state upon the cracks while hot, finishing up by going over the cement with a moderately hot iron, so as to make a good connection and a smooth joint. The above will repair zinc, lead, or iron, and is a good cement for aquariums.

Painting by means of Injection.—A foreign inventor, known by the somewhat poetic name of M. Violette, proposes a new method of painting. He employs a so-called pulverizator (spray producing-machine) for the application of pigments and dyes to the surface of textile fabrics, paper, &c. The coloured liquid is projected in an impalpable spray, and made to fall on the objects to be painted or dyed, as the case may be.

Hampstead Heath.—Public attention has lately been again drawn to the question of the preservation of Hampstead Heath, and it has been alleged that some "encroachments" have recently taken place by various parties. It is further said that Sir John M. Wilson, Bart., the present lord of the manor of Hampstead, offered some time ago to part with his interest in the heath to the Metropolitan Board of Works for £50,000. The subject was brought under the notice of the Hampstead vestry by Mr. P. Hemery Le Breton, chairman of the vestry and representive of the parish at the Metropolitan Board of Works. The matter was broached by Mr. Le Breton, in consequence of a letter in a recent number of the *Hampstead Express*, the writer of which seemed to hint that Mr. Le Breton had relaxed his efforts for the preservation of the heath to the public. Mr. Le Breton made a statement to the vestry, showing that the Metropolitan Board had been pursuing negotiations on the subject right up to the time of the death of Sir John Thwaites, and with favourable prospects. The only thing he could publicly state at present was that there was a very good prospect of 240 acres of the heath—the main part of it—being saved. If little pieces had been given up by the consent of the "homage," the public could never get them back. Mr. Le Breton showed that he had, in conjunction with the late Sir John Thwaites, taken an active part in the negotiations.

The Victoria Embankment.—On Thursday week the Whitehall approach to the Victoria Embankment was completed and opened for vehicular and passenger traffic. This approach is a continuation, in a straight line, of Whitehall place. The works in connection with the approach to the Embankment from Craven-street to Charing Cross are at a standstill, in consequence of a difficulty in obtaining possession of a small piece of land necessary to complete the approach. A great number of men are now employed in making the approach from Norfolk-street.

South-London Tramways.—On Thursday week a number of excavators commenced breaking up the main road and laying down the metals for the extension southward of the Brixton and Kennington tramway from its present terminus (near the Brixton Police station) to the cross-roads at Brixton Church. The tramway from Clapham to the junction at Kennington is now completed, and in another week the line from this junction to Hercules-buildings, Westminster-road, will be finished, and large tram carriages will run from Brixton and Clapham to Westminster for public traffic.

New Tramways for North London.—The authorities of the northern metropolitan districts received notices on Friday last from Messrs. Ashurst, Morris & Co., solicitors and agents for the Metropolitan Street Tramways Company (who obtained their Act of Parliament last session for laying down tramways in some of the principal thoroughfares of the north and north-western districts) of the intention of the company to forthwith commence the works for the laying of their tramways. The first section, it is understood, will be from the Holloway-road, near the Nag's Head, through the parish of Islington, along the Camden-road to the Brecknock Arms, thence continuing through S. Pancras, down the Camden-road, passing the Midland Railway and the Camden-road station of the North London Railway, to the Red cap, turning into High-street, Camden-town, and along the Hampstead-road to the Euston-road, where is to be the terminus of the first section. The notices which have been served call upon the local boards to issue their official sanction for breaking ground within a period of seven days, with a further declaration that, unless such sanction be received within fourteen days of the date of the notice, the Company, exercising the powers vested in them by the Act of Parliament, will at once commence their works and lay their tramways without such official authority.

Wisborough Green, Sussex.—The workmen employed by Mr. S. Belham, builder, of Buckingham Palace-road, Pimlico, were entertained by a supper given them by the vicar, the Rev. W. A. Bartlett, for whom a vicarage and outbuildings have been built. The meeting was presided over by J. Hartley. Mr. Seddon, of Park-street, Westminster, was the architect. After enjoying themselves each one left, wishing long life and prosperity to their employer. The buildings have been twelve months in erection.

Fatal Scaffold Accident at the Presbyterian Church, Camberwell.—On Tuesday afternoon, Mr. William Carter, the coroner for East Surrey, held an inquiry respecting the death of Isaac Harper, aged 62 years. Deceased was a slater in the employ of Mr. Iles, a contractor. About a quarter to four o'clock on Friday afternoon last he was engaged on a scaffolding which had been erected in front of the new Presbyterian Church, Camberwell, covering the roof with slates, when of a sudden it gave way and he was precipitated to the ground, a distance of about 25ft. Several persons went to his assistance, but his injuries were of so severe a nature that he expired shortly afterwards. It was stated that the scaffolding was constructed of the worst materials, and in consequence the inquiry was adjourned for further evidence.

The Proposed Indian Government School of Engineering.—*Nature* believes that the scheme for the proposed Indian Government School of Engineering is being warmly combated by the scientific branches of the army, whose counter-proposal is that the Royal Military Academy at Woolwich shall be made into an equivalent of the *Ecole Polytechnique*, and that young men intended for the engineering service of the Government should be educated there, or, better still, officers of the Royal Engineers should he lent to the Indian Government.

The New Workhouse at Islington.—More than two years have elapsed since the Islington Guardians laid the foundation stone of their new workhouse at Holloway, and though the time for the completion of the contract has long since expired, the work is still unfinished. Mr. Burden is the architect, and Messrs. Nutt & Co. are the contractors.

A Bishop's Chair.—At a sale by auction of household furniture, &c., at Worcester, on Saturday, a selection of antique carved oak furniture was brought under the hammer, including a finely carved and well-preserved arm-chair, which has been in the possession of John Hough, Bishop of Oxford, 1690; the Bishop of Lichfield and Coventry, 1699; and the Bishop of Worcester, 1717; several inscriptions upon the chair proving its antiquity and the fact that the above-mentioned Church dignitaries have reclined in it; yet the highest bid for this ancient and unique relic was only a few shillings, about the price, in fact, of a common Windsor chair.

Depression in the Slate Trade.—The slate districts of North Wales are now suffering from a great falling-off in the demand, and consequent diminution of employment for labour. According to the *Investment Circular*, even at the Penrhyn Quarries, where for many years the demand has been greater than the power of supply, large numbers of the quarrymen have been discharged, and assistance given them by Lord Penrhyn to enable them to travel and seek employment elsewhere—strong evidence that the depression is expected to be protracted.

Chips.

New girls' schools have just been commenced in Byron-street, Bromley. Accommodation will be provided for 300 children, and the cost of the building, exclusive of site, will be £2,000.

The total cost of the new Highgate Infirmary, for the parish of S. Pancras, has been £49,659.

The new blocks of dwellings for the poor on the site of the Magdelen Hospital, Blackfriars-road, have been commenced. They are being erected under the auspices of the Peabody Trustees.

The City Markets Committee have entered into an agreement to repurchase 22 acres of the site of Deptford dockyard, for the sum of £91,000, as a site for the proposed foreign cattle market.

At a meeting of the Manchester City Council, on Wednesday week, a portrait of Sir Joseph Heron, the town clerk, painted by Mr. Knight, R.A., and subscribed for by members of the Corporation, was presented to the Council.

A paper will be read on the "Theory of Screw Propulsion," by Mr. Michael Sefi, before the Society of Engineers, at Exeter Hall, on Monday next.

The chapel of ease at Holly Bush Hill, Stoke Pogis, was recently re-opened after enlargement and restoration. A chancel has been added, a new open-timbered roof has been constructed, and open seats substituted for the old pews.

The Royal Albert Asylum for Idiots and Imbeciles, Lancaster, was formally opened on Wednesday week by the Duke of Devonshire. Only one wing, however, is yet completed and ready for occupation.

Plans are in preparation for the erection of a new dispensary for Kensington Workhouse, at a cost of £5,000, and a new infirmary is to be erected for the newly formed Westminster Union, the proposed outlay being £10,000.

The Jewish Synagogue, in S. Alban's-place, S. James's, was re-opened on Saturday last, after restoration and decoration.

The bas-relief representing Napoleon III. on horseback, which decorated the façade of the new constructions of the Louvre, has been removed.

The Home Secretary has appointed Mr. Applegarth, secretary to the Amalgamated Society of Carpenters and Joiners' to be a member of the Royal Commission to inquire into the operation of the law with respect to contagious diseases.

A cottage hospital is about to be erected at Amlwch (Anglesea) at a cost of £500. The site has been given by Lady Dinorben.

Timber Trade Review.

The following are the average prices paid at public auction for wood goods during the last four months. It is of course understood that short lengths have been rejected and only those taken which represent a fair average length, and it will be readily seen that any other way would mislead. Such a list is interesting, as it shows that the war has not made such a great difference in prices as many supposed it would, the principal rise being in Swedish goods:—

	Per	£	s.	d.
Archangel yellow 3 × 9	Petg. std.	12	5	0
Bjorneborg yellow 2½ × 7	do.	6	12	6
Christiana 1st yellow 2½ × 6½	120 12ft.	8	2	6
Do. 2nd do.	do.	7	0	0
Do. 3rd do.	do.	9	5	0
Do. 3rd white do.	do.	6	0	0
Do. 3 × 9	do.	11	15	0
Do. 1st white 2½ × 7	do.	7	10	0
Do. 2½ × 6½	do.	6	15	0
Do. 2nd white 2½ × 7	do.	7	10	0
Do. 2½ × 6½	do.	6	10	0
Do. 3 × 9	do.	13	2	6
Hudikswall mixed yellow	Petg. std.	7	10	0
Dram 1st yellow 2½ × 6½	120 12ft.	7	0	6
Do. 2nd do.	do.	6	17	6
Do. 3rd do.	do.	6	7	6
Do. 2nd white	do.	6	15	0
Do. 3rd do.	do.	5	7	6
Escoumains white spruce	120 12, 3 × 9	14	5	0
Fredrickstadt 1st white	do.	14	15	0
Do. 3rd yellow	do.	7	0	0
Do. yellow 1st flooring 1¼in.	square		13	9
Do. 1in.	do.		10	3
Do. ⅞in.	do.		8	3
Do. ¾in.	do.		7	0
Do. ⅝in.	do.		6	10
Do. 2nd do. 1in.	do.		8	1
Do. ⅞in.	do.		7	5
Do. 1¼in.	do.		10	5
Gefle 1st yellow 3 × 9	Petg. std.	10	7	6
Do. 3 × 7	do.	9	5	0
Do. mixed yellow 4 × 12	do.	11	10	0
Do. 4 × 9	do.	11	0	0
Do. 2 × 9	do.	9	17	6
Do. 3 × 7	do.	11	0	0
Do. 2½ × 7	do.	11	0	0
Do. 3rd yellow 4 × 11	do.	11	0	0
Do. 4 × 9	do.	9	17	6
Do. 3 × 9	do.	9	5	0
Do. 3 × 11	do.	9	5	0
Do. 3 × 8	do.	8	5	0
Gothenburg mixed yellow 4 × 11	do.	10	5	0
Do. 3 × 9	do.	10	0	0
Do. 3 × 8	do.	9	5	0
Do. 3 × 7	do.	9	10	0
Do. 4 × 9	do.	9	15	0
Do. 2½ × 9	do.	10	5	0
Do. 3rd yellow 4 × 9	do.	9	7	6
Do. 4 × 6	do.	7	12	6
Do. 4 × 11	do.	9	5	0
Do. 3 × 11	do.	9	5	0
Do. 3 × 7	do.	7	17	6
Do. 2½ × 9	do.	9	5	0
Do. 3 × 9	do.	8	10	6
Gothenburg mixed white 3 × 11	do.	8	17	0
Do. 2½ × 7	do.	7	0	0
Do. 3rd white 4 × 9	do.	7	5	0
Do. 3 × 11	do.	8	2	6
Do. 3 × 9	do.	7	10	0
Do 2½ × 7	do.	6	17	6
Halifax birch	load	2	13	0
Holmsund 3rd yellow 3 × 9	Petg. std.	9	5	0
Husum do. 3 × 11	do.	9	0	0
Laurvig 1st white 3 × 9	120 12ft.	12	7	6
Do. 2½ × 7	Ptg. std.	7	2	6
Do. 2nd white do.	do.	6	10	0
Do. 3 × 9	120 12ft.	11	15	0
Monsteras lathwood	cub. fthm.	4	12	6
Miramichi unsorted spruce 3 × 11	120 12 3 × 9	14	0	0
Do. 3 × 9	do.	13	0	0
Do. 3 × 7	do.	11	17	6
Onega 1st yellow	Petg. std.	14	15	0
Do. 3rd do.	do.	8	12	6
Paskallavick lathwood	cub. fthm.	4	7	6
Petersburg 1st yellow 3 × 11	Petg. std.	12	15	0
Do. 3 × 9	do.	12	5	0
Do. 1st white 3 × 11	do.	10	5	0
Do. 3 × 9	do.	9	5	0
Do. 3 × 7	do.	8	10	0
Do. lathwood	cub. fthm.	6	0	0
Pitch pine (Pensacola)	Petg. std.	11	2	6
Do. (Georgia)	do.	12	10	0
Pugwash spruce	120 12 3 × 9	11	15	0
Quebec 1st bright 12ft. 3 × 11	Petg. std.	18	15	0
Do. 1st floated	do.	16	2	6
Do. 1st dry floated	do.	17	0	0
Do. 2nd bright	do.	13	5	0
Do. 2nd floated	do.	12	0	0
Do. 2nd dry floated	do.	12	5	0
Do. 3rd floated	do.	9	5	0
Do. 3rd dry floated	do.	9	12	6
Do. 3rd bright	do.	9	5	0
Rimouske 1st spruce 3 × 9	120 12 3 × 9	14	7	6
Do. 3 × 8	do.	12	0	0
Do. 3 × 7	do.	12	10	0
Riga crown white	Petg. std.	8	7	6
Soderham 1st yellow 3 × 9	do.	10	10	0
Do. 3 × 7	do.	8	17	6
Do. 3 × 8	do.	9	0	0
Wyburg 1st yellow 3 × 7	do.	8	5	0
Do. 2½ × 9	do.	9	5	0
Do. 2½ × 7	do.	9	15	0
Do. 3 × 9	do.	9	10	0

LATEST PRICES OF MATERIALS USED IN CONSTRUCTION.

Timber.

Teak ....load	£13	0	13	10
Quebec, red pine	3	15	4	15
,, yellow pine	4	0	4	15
St. John N.B. yellow	0	0	0	0
Quebec Oak, white	6	0	6	10
,, birch	3	15	5	0
,, elm	4	5	5	5
Dantzic oak	0	0	0	0
,, fir	3	5	4	10
Memel fir	3	10	4	10
Riga	3	10	4	10
Swedish	2	13	3	0
Masts, Quebec red pine	3	15	5	5
,, yellow pine	3	15	5	5
Lathwood, Dantzic, fm	3	15	5	10
,, St. Petersburg	5	10	6	10
Deals, pr C., 12 ft. by 3 by 9 in.,				
Quebec, white spruce	13	0	18	10
St. John, white spruce	12	10	14	0
Yellow pine, per reduced C.				
Canada, 1st quality	16	10	18	0
2nd do.	12	0	13	10
Archangel, yellow	11	10	13	0
St. Petersburg, yel.	11	10	13	0

Finland	£7	10	£8	10
Memel	0	0	0	0
Gothenburg, yellow	9	0	11	0
,, white	8	0	9	0
Gefle, yellow	10	5	12	10
Soderham	8	10	12	0
Christiania, per C., 12 ft. by 3 by 9 in. yellow	10	0	12	10
Flooring boards, per sq. of 1in., first yel	7	6	10	6
First white	7	0	9	6
Second qualities	6	6	8	6
Pumice Stone pr ton	6	0	8	0
Oils, &c.				
Seal, pale....per tun	26	10	0	0
Sperm body	83	0	0	0
Cod	39	10	0	0
Whale, Sth. Sea, pale	36	10	37	0
Olive, Gallipoli	49	0	0	0
Cocoanut, Cochin, ton	43	10	0	0
Palm, fine	39	0	39	10
Linseed	31	0	0	0
Rapeseed, Eng. pale	43	10	0	0
Cottonseed	27	10	34	0

Metals.

Lead —							
Pig, Foreign	per ton	£18	0	0	£0	0	0
,, English W.B.	do	20	5	0	0	0	0
,, Lead Co.	do	20	5	0	0	0	0
,, Other brands	do	18	15	0	19	0	0
Sheet Milled	do	20	10	0	21	0	0
Shot, Patent	do	22	0	0	23	0	0
Red or Minium	do	19	15	0	20	10	0
Litharge, W.B.	do	0	0	0	0	0	0
White Dry	do	30	0	0	0	0	0
,, ground in oil	do	0	0	0	0	0	0
Copper :—							
British—Cake and Ingot	per ton	£69	10	0	70	0	0
Best Selected	do	70	0	0	71	0	0
Sheet	do	73	0	0	76	0	0
Bottoms	do	78	0	0	0	0	0
Australian	do	70	0	0	72	0	0
Spanish Cake	do	0	0	0	0	0	0
Chili Bars, cash	do	63	10	0	64	10	0
,, Refined ingot	do	69	0	0	71	0	0
Yellow Metal	per lb	0	0	6½	0	0	0
Iron :—							
Pig in Scotland, cash	per ton	£2	11	9	0	0	0
Welsh Bar, in London	do	7	5	0	7	12	6
,, Wales	do	6	15	0	0	0	0
Staffordshire	do	7	10	0	8	0	0
Rail, in Wales	do	6	15	0	7	5	0
Sheets, single in London	do	9	10	0	10	5	0
Hoops, first quality	do	8	10	0	9	5	0
Nail Rod	do	7	10	0	8	0	0
Swedish	do	9	15	0	10	0	0

Trade News

TENDERS.

Bristol.—For excavating for and building cellar walls to premises in Victoria-street for Mr. F. Rumboll. Mr. W. Cloutman, surveyor, 3, Exchange, Bristol:—

Beaven & Son	£205	0	0
Storkey	204	18	0
Hibbard	175	0	0
E. Stephens	172	16	0
J. Stephens	169	0	0
Symes	167	0	0
Hewitt	153	0	0
Rogers	150	0	0
Pady (accepted)	141	12	0

Leadenhall-street.—For alterations to offices for the Realm Building and Investment Company. Mr. John W. Morris, architect:—

J. Sheffield	£60	0	0
A. Sheffield	53	0	0
Harris & Wardrop	47	12	0

Liverpool.—For Presbyterian Schools, Liverpool. Mr. W. J. Mason, architect. Quantities by Mr. Geo, Northcroft, surveyor:—

Corbett	£1416	0	0
Rome	1370	0	0
Tomkinson	1350	0	0
Readdie	1337	0	0
Litt & Wilkinson	1280	7	1
Urmson	1272	0	0
Bateman	1271	0	0
Nicholson & Ayre	1248	0	0
Haigh & Co.	1247	0	0
Potter Brothers (accepted)	1180	0	0

THE BUILDING NEWS.

LONDON, FRIDAY, SEPTEMBER 30, 1870.

LONG RAILWAY JOURNEYS.

IT cannot fail to be acknowledged by all railway travellers that, with the exception of the royal saloons, and those few carriages which are constructed for the use of invalids, there is not a single one in the United Kingdom in which anything approaching a comfortable sleep can be obtained during a nocturnal journey. In a word, there is no such thing on our railways as a sleeping carriage. The common answer to the demand for this accommodation is that it is not needed; that our railway journeys are too limited in extent ever to render such carriages necessary; and that if people want to sleep, they must either do so in the irksome position of a sitting posture or dispense altogether with "nature's sweet restorer." It is not difficult to show that the answer is completely false; that the longest journeys in which there are the fewest stoppages are made by night trains; and that a large number of people, to whom time is money, invariably travel by night. At present, the only manner in which these passengers can indulge in an attempt at a recumbent posture is to place their feet on the opposite seat—a posture which speedily becomes so excessively *genant* as to compel them to abandon it. By means of a judicious "tip" to the guard, sometimes a kind of short stretcher can be procured which fits in between the opposite seats, and is a slight improvement; but this presupposes two circumstances, which are not always included in the conditions: one of these is, that the passenger is travelling "first"; and the other, that the opposite seats are untenanted, or, in other words, that the compartment is only half full. Occasionally this contingency occurs in the first class carriages, but rarely in the second. Although the reason alleged by railway companies against the employment of sleeping carriages is founded upon the presumed absence of all necessity for them, yet a spurious economy is undoubtedly the real foundation for the allegation. If the original design of carriage be adhered to, it is clear that to contain the same number of passengers a sleeping compartment must have twice the superficial dimensions of one intended only for diurnal traffic. That, if carriages were designed specially for affording accommodation for night passengers, this will not be the case will be shown as we proceed with the subject. The question that remains to be decided is whether a certain number of the present carriages should be converted into sleeping carriages, or whether new ones on an entirely different plan should be constructed. Again, these latter might, in their turn, be either bonâ fide sleeping carriages or so designed as to be convertible at will into a day or night carriage. The relative economy of these two principles of construction would have to be decided for each particular instance, as it would in a great measure depend upon the mileage of the line, the proportion of day to night traffic, and various other considerations belonging to the especial department of the traffic manager.

It is worthy of notice that notwithstanding the extension that our railway system has gradually undergone, not merely with regard to its introduction into districts and localities which for a long time remained strangers to its advantages, but with respect to the actual length of continuous journey which can now be undertaken by it, yet the accommodation for passengers has remained very nearly what it was forty years ago. While the permanent way, the engines, and the rolling stock have been modified, so far as mechanical features are concerned, the interior arrangements have undergone little or no alteration. On many lines there are still to be seen the original first, second, and third-class carriages. These seldom come so far up as London, for the remainder of their lives is devoted to the transport of the local rural traffic. In looking at some of the worst specimens of these, namely, those belonging to the third-class, and comparing them with cattle trucks, we came to the conclusion that in summer time, at all events, the cattle had by far the best accommodation. They have plenty of light and air, whereas the unfortunate occupants of the boxes misnamed carriages are deprived of both. The evil of our diurnal system of railway travelling, if it may be so termed, is not confined to our own country, but has spread to the Continent. Loud complaints have been continually raised in France, and the several companies urged to adopt the American plan, which provides for both day and night accommodation of passengers. It is very questionable whether the American system would answer for us, although it might possibly do so on the Continent. The cause of the French having followed our example in this particular is readily accounted for from the circumstance that all their lines were but copies on a very slightly modified scale of our own. They were most of them laid out by English engineers, and constructed by English contractors, so that it would have been little short of a miracle had they done otherwise than partaken of our defects. However well adapted a particular class or plan of carriage may be for a line which runs for a distance of three thousand miles, and unites the shores of the Atlantic and Pacific, it needs but little common sense to divine that a precisely identical arrangement would not answer in cases in which the distance does not often exceed more than a tenth of that alluded to. Apart from the accommodation offered by the American plan, there is a difference in our social habits and customs which would seriously militate against the exclusive adoption of it. The same may also be said with regard to most European nations. It is not the adoption of any especial plan or design of carriage affording sleeping accommodation that we are contending for, but simply that on our English railways journeys occupying the whole night are continually and regularly undertaken, and that some arrangement should be introduced which would allow of a traveller taking genuine rest during the night. He would thus be enabled to transact any business he might have in hand on the day of his arrival at his destination, instead of being, as he frequently is, only fit to go to bed. We are quite aware that there are plenty of people who care nothing for the fatigues of a night journey, and in fact look upon it as rather "a good thing" than otherwise, but, on the other hand, there are also a large number who are completely knocked up by it. Ladies are particularly sensitive to this kind of fatigue, and we have known them to present so worn and jaded an appearance after a night's sojourn in a railway carriage that one would almost imagine they had walked the distance instead of being carried over it at the rate of forty miles an hour.

There is a point in connection with the particular system of the American railway accommodation that deserves mention. It has been stated by the advocates of that method that it is impossible for accidents and assaults against private individuals to occur owing to the peculiar facility afforded for constant inspection and surveillance by the officials, by means of the especial nature of the construction of the carriages. This statement has, however, been proved to be false, and the American carriages to be no safer than our own in this respect. About six years ago, a regular band of roughs took their places in a train from New York to Lake Erie, killed two or three of the passengers, and wounded several others. So much for the security to life and property on the transatlantic lines. We have already drawn the attention of our readers to the gradual augmentation in the length of the railway journeys that can now be made in the United Kingdom. The same result has taken place on the Continent. The longest continuous journey within the French Empire extends from Cherbourg to Nice, a distance of 978 miles, while the international through-journeys starting from Paris are as follows: From Paris to Berlin, 770 miles; to Vienna, 963 miles; to Madrid, 928 miles; and to Cadiz, 1,474 miles. Will any one deny that for journeys of such lengths some comfortable sleeping accommodation ought to be provided? The difficulty appears to lie in the circumstance that the American system is not applicable in the case of European countries, in consequence of the difference that prevails in the habits and social ideas of the inhabitants of the two hemispheres. But there is clearly some solution to the problem, and it no doubt will be found in a combination of the two systems. What is wanted is a carriage which is so designed as to afford some of the advantages of the American plan without, at the same time, sacrificing those which are inseparably connected with European tastes and prejudices. A carriage of this description should combine the freedom of the one principle with the privacy of the other. A traveller should, in fact, have the choice of availing himself of either or both at his pleasure. The simplest method of effecting this combination appears to be in the adoption of a class of carriage having two stories. Some of these have been used on the Parisian tramways and found perfectly satisfactory. The lower story is divided into first, second, and third-class compartments, and is constructed in strict accordance with European habits, or, as it may be said, after the English fashion. The upper is arranged on the American plan, having a longitudinal passage running the whole length of the carriage, with the seats disposed on each side. The advantage this particular description of carriage enjoys over the American example, is that it accommodates more passengers with a given volume, and consequently with a given weight. This is a most important advantage. In any train there are two portions into which the total load carried may be subdivided. The one is termed the paying, and the other the non-paying load. The engine and rolling stock evidently constitutes the latter of these, while the former is composed of the passengers and whatever luggage or goods that are transported by the train. If, therefore, we suppose the weight of two trains to be the same, but that one has a greater capacity than the other, that is, it will hold a greater number of passengers, the paying load at once becomes augmented, and the proportion between the two increased. Had we space we would willingly enter upon the question of the possibility of adapting two-storied carriages to those lines in England upon which long journeys are made. The obstacle that appears insurmountable would seem to be passing the bridges and tunnels, as it would be difficult to so arrange the height of the carriage as to pass under the limited headway. Something might probably be gained in this respect by lowering the floor of the carriage, and the wheels might be put under the seats, as is the case in the carriages of the broad gauge, only there is no necessity for sticking them just in front of the door, to the great inconvenience of those getting in and out. The minimum height from the top of the rail to the underside of any bridge passing over a line is 13ft. 6in., so that it would not be possible to make the height of the stories more than 6ft., and that would allow scarcely enough room for the frame of the carriage itself. This height would not be wanted in the lower story, as the occupants would never take any but a sitting or recumbent position, but on the other hand would be little enough for the upper story.

UPSHOT OF MR. BARRY'S CASE.

AS, in the pending dispute between Mr. Edward Barry and the Chief Commissioner of Her Majesty's Office of Works, the Building News has persistently withstood the temptation to lay down "the law"—not merely of the profession but of the land—we may now take up the controversy with a tolerably unbiassed mind at the point to which it has arrived, that is to say, the *dictum* of the law officers of the Crown, that the drawings of the Houses of Parliament belong, not to Mr. Barry, but to the nation. Looking at the question as a simple matter of law, wholly disentangled of any proviso or rider laid down by the late Sir Charles Barry or his son, it is hard to see how the said law officers could have expressed any other opinion. Sir Charles Barry seems to have entered into no special contract with the Government of his day as to the retention or non-retention of these drawings. He probably did what every nine architects in ten have been content to do since his day. He took it for granted the custom of the profession would go unchallenged, and that the drawings would never be claimed. Mr. Ayrton does, however, lay claim to them; and, as it can clearly be shown that but for the percentage paid him by the nation Sir Charles would never have made the drawings at all, the inference is clear enough they form part and parcel of the *quid pro quo* of which the bargain consisted. We, therefore, have not joined in the outcry against the Chief Commissioner. He stood upon the simple legal right of the nation; and so far the utterance of the law is consistent with the claim he has set up. It is not a question of professional custom—it is a question of law. Pity it is that the Institute of Architects—so prone to dogmatise and so facile to abandon a position once taken—did not adopt this more modest view of the controversy.

We have every sympathy for Mr. Barry, and trust that if advised to "rest and be thankful" at the point to which his case has now tended, some middle course may be adopted—some compromise be accepted by which Mr. Ayrton may obtain all he sought, and Mr. Barry preserve all he cared to retain by the controversy. In future cases, architects, if they are wise, will do well to protect themselves from the chance of being involved in these invidious disputes. There is much to be said on both sides of the question, even after it is disentangled of the question of copyright, about which we have heard so much; the most, perhaps, from those who are themselves the greatest plagiarists. Thus, the dispute is only half disposed of by a client's saying, "I have paid for these drawings; *ergo* they are mine." It may be so in the case of a man who simply engages an architect to prepare him a set of drawings for a building which he does not intend the designer to carry out; just in the same way as a hare purchased with its skin on at a poulterer's shop is, hare and hareskin, the property of its purchaser. But should the client intend his architect to carry out his design, or should the purchaser of the hare intend his poulterer to deliver it skinned and prepared for the spit, the two transactions become more complicated. In each case the law of *custom* (which is held to govern the law) steps in; and we have the architect, after supplying the contractor with duplicates, retaining the original drawings; and the poulterer, after trussing the hare, retaining the hareskin—quite illegally, we have no doubt, if Paterfamilias would but call in "the law officers of the Crown" to define his legal right to it.

It is reasonable enough that in the case of such an edifice as the Palace of Westminster the nation, or its executive, should possess ample facilities for referring to the original drawings of the building, though not very likely that much good would accrue from any non-professional reference to them. It would be well if drawings of such edifices, and indeed of all public structures, were deposited in public archives. On the other hand, it is quite natural that an architect, of all men, should wish to possess these records of his past works. If henceforth it is to be understood that he is to give them up as a matter of course, we foresee but one of two consequences of the arrangement, viz., the demand of an increased fee for the architect's preparation of these triplicate drawings for deposit or return to the client, or utter confusion and chaos arising from the original drawings being taken away from their time-honoured and natural custodians—the architects who drew them, worked from, and adjudicated upon them, and who are, in fact, the only people who are at all likely to take care of them, or to care about them after the lapse of years. This, putting aside—as we have done—the question of copyright, is, as it seems to ourselves, the practical view of this long controversy. It has been sought to be settled as a question of professional etiquette; it is now being settled as a dry question of law; but it is really *a mere question of money*. If our poulterers are not to keep the hareskins they will assuredly charge us for trussing the hares; and if our architects are not to keep their drawings we fear there's nothing for it but to pay them for preparing the requisite duplicates, either directly, in their professional bills, or indirectly (as was stated in the House of Commons' debate), in their surveyors' quantities.

◆

MANSIONS IN BIRDCAGE-WALK.

AN imposing block of buildings, comprising two houses, has just been built at the corner of the entrance to Queen's-square, Westminster, from Birdcage-walk, by Mr. Thomas H. Wyatt, as architect. The character of this work, though simpler, is in other respects very similar to that of the still more imposing work from the same hand in Park-lane, facing Hyde-park, and we propose to consider them together. They each tower up far above all their neighbours, and are conspicuous from the colour of the materials used—red brick, relieved with stone dressings. They are further picturesque in form and skyline. So far they are an improvement upon the ordinary class of street building to which we have been accustomed. It is vigour in such points that we so greatly need to diversify the monotony of London, and a comparison of these works in general effect with that of the mansion built in Piccadilly for the late H. T. Hope, Esq., and now converted into a club, will show that the delicate Parisian refinement of detail exhibited in that building is far less suitable for the purpose than Mr. Wyatt's coarser and manlier style. We can further commend in the Queen's-square houses their assimilation to the surrounding old structures of the date of Queen Anne. Here, however, we regret to say, our admiration ceases. It is one thing to select a fitting style, and another to treat it with architectural propriety, and to the handling of the detail, throughout this building particularly, and in a less degree to that in Park-lane, we feel compelled to make objections. The general disposition of the façade of the latter is good, but the frontage facing Birdcage-walk, with its too numerous and varied bay windows, is crowded and fussy, and devoid of plain wall-surface as a relief to their complicated forms. One would almost imagine that the occupants of one room would be able to look into the rooms of their neighbours, so closely are these projections set. Then if we look at the roofing of these features the result is not satisfactory. The dormers are too large in proportion to the tiny turreted peaks into which they are incorporated. The strangest portion of the design is, however, the absurd travestying of Classical architectural features, after the vicious manner introduced by the architects of the modern Italian style. This has been carried to an extent quite unknown in the far purer style of the reign of Queen Anne. The great recommendation of the works of that date, and which has met, even in our opinion, with somewhat too laudatory appreciation of late, is its exquisite refinement and delicacy, We look for any such characteristics in this work of Mr. Wyatt's. There is not one feature to compare for a minute with the old canopies to the doorways of the adjoining houses in Queen's-square, nor is there is one finial, dormer, window, or doorway in his new building to which one can refer as satisfactory in design, and yet there are many that are elaborate and pretentious. Look, for instance, at the extraordinary jumble of stone dressings which surrounds the staircase window on the eastern side of the block; at the queer form of some of the dormers, which would be more in place in a rococo dressing-glass, such as those displayed in Tottenham Court-road; or at the chimney-stacks, whose lofty proportions are buttressed up by equally trival brackets at the base. Then there is an ugly lozenge-shaped panel introduced into the middle of the said chimney-stacks, which has excited our wonder if not our admiration. For what purpose it is put there is as far beyond our comprehension as the manner in which it is held. It is not properly bonded, as stone should be, into brickwork, and must, one would think, cut all the bond of the latter to pieces. It is an acrobatic architectural performance, which we should prefer to leave to the Japanese to conceive, or at least to execute. We look for dignity in the work of the President of the Institute of Architects as we should in his deportment, and do not expect him to imitate jugglers in either. However, we have no desire to be captious, and are thankful for what he has been pleased to bestow upon us. We only regret that such architectural opportunities should not be made the most of. We desire that buildings of such cost should not show a lack of careful design in the carrying out, — that thought should not be the only commodity of which there has been an apparent economy in the expenditure. As it is, we admit of these two blocks of building being an advance—a great advance—upon the class to which we have been generally treated by the Cubitts and other speculating builders of Belgravia. They are quite on a par, and perhaps somewhat more, with the recent buildings on the Grosvenor estate by Mr. Cundy. But they do not rank with the Club-houses of Barry, with the Insurance office of Woodward, or other of the most thoughtful works of the day.

◆

ART AND THE COSTUME OF WOMEN

IT has not a little puzzled those who have studied the history of architecture to account in any way for the marked changes which we see took place in the course of any one pure style of architecture. What, for example, can be more different than the details and general character of the Early English, the Middle or Decorated English, and the Late or Perpendicular English? How were these successive changes brought about? Did one superior genius in each case do the work, or was it simply vague fashion as in dress? The costume of the successive times, be it observed, followed the architecture; and each style of architecture exhibits, in the figures which decorate it, the dress and manners of the age in which it appeared and was practiced; so that the successive changes in costume and dress may yet be accurately chronicled from the *remains* of our indigenous architecture, wall painting, and glass painting. But now-a-days all this is changed. Who, for instance—what architect—would ever think of ordering his usual trade glass-painter to paint in a church memorial window a "girl of the period," in the veritable and exact costume of the day and hour, with all the quaint singularities and ugliness of the dress? And yet such a method of working from the actual existences of the time was, in the dark ages of ignorance, the universal rule, and it is to it that we owe all the art and architecture and decoration that we now have. No two systems of fine art production can be more diverse and opposite than that of the past of Gothic art and the present revival, as it is called, of it. We are led to these thoughts from the deplorable fact of Paris, the centre of European fashion, and the fashionable law-giver of the modern world, being shut out so completely from all knowledge and communication. All new fashions and new inventions in costume come originally from that gayest of cities, and if there be a veritable goddess of fashion she certainly resides there. What is she now doing?

It is a subject not a little singular, and can hardly be accounted for, how it is that male costume, of which we said a few words a week or two since, changes so slightly from year to year, while the fashionable costume of women seems to admit and even call for a change almost every month, not in colour only, but in form. There are fashionable colours perpetually on the change, like the colours of the chameleon, and what is quite right this week is all wrong and out of sorts next week.

In calling a little attention before to the costume of the present, we ventured to suggest that some improvement might be effected in the dress of our soldiers, both as to form, and fitness, and colour, and we have some reason to know that an attempt will be made to effect this; but perhaps after all the prejudices of the time and fashion will be too strong for it, so that there may be some interest in a few words on *female* costume and its present adaptability to the purposes of art in painting and sculpture. One great advantage it certainly has, viz., that it is always on the change, and never at rest; so that what is likely to prove so difficult in the attempt to change, even for the better, the costume of the soldier, is not likely to hinder *change*, if not improvement, in the dress of women. It is curious to note how different are the public ideas as to fitness in pictures and in reality. What is thought not only right and proper, but absolutely beautiful and sublime, in the paintings of Raphael and M. Angelo, would, in real life, as things now are, be considered not a little improper and out of all due order and respectability. There are no more beautiful things in fine art than the famous Madonnas of Raphael, or can costume more becoming be devised; yet to see people thus clad and occupied in the maternal art of nursing a child you must leave the quarters of fashionable life and existence, and going into some dirty bye-street or down some narrow and unfrequented court you may see almost living transcripts of Raphael's famous pictures. It is the land of Erin that supplies such pictures as these. The women in a genuine Irish court are, it is certain, too low in the scale of humanity, as fashion has now moulded it, to be above the duties of mothers, and it is truly wonderful to see sometimes what a poor untutored Irish woman will do in the pictorial and high artistic way with a baby and an old shawl! All the strength there was in the great painter of human feeling and passion himself would be needed to fix it upon canvas. Truly the Irish have no business in a high northern latitude like this; they are essentially a a-southern and half eastern race, for not even in the distant east have the people better and higher notions of artistic dress and the mode of wearing it—and that, be it observed, naturally, and without any sort of thought of making up an effect or attitudinizing. It is all from the natural unstudied instinct of the moment, and if you want to see pictures of "humanity," it is in London, down some narrow dirty court, filled with mothers and children from the land of the Shamrock, you must go for it. What a curious subject for the future of art, when it begins to exist, and when "art-manufacture" begins to die out, as it must and will, is this of costume; and may it not be that the future of costume and artistic dress will come, not from the present law-giver, Fashion, but out of low and humble life—not out of palaces, but squalid narrow courts!

It must here be noted that Dame Nature does not always do the right thing, for if the Irish element is too far north to work out its proper and its own destinies, the same may be said of the French. Is not Paris too far north? The French type of face and head is certainly more refined, and sharper and more artistic, than the English, and the dress and mode of wearing it, and movements of French women are surely beyond, even as a mere matter of fashion, anything England can exhibit. Paris rules the modern world of female attire, but it is here again that we would venture to assert that the costume, rough though it may be, of the common people is artistically superior to that of their betters, good as it sometimes is. If it is surprising to see how much can be done with an old discoloured shawl by the Irish women, it is, perhaps, even yet more wonderful to behold what marvels can be accomplished by a French woman with a yard or two of thin gauze or muslin. It matters nothing what it is for, round the neck or over the shoulders, or round the head, as cap or turban, it is all equally magical; she needs no looking-glass to arrange the folds of it, for withfingers so light the "drapery" falls of itself. Whatever the stolid Germans may do with Paris short of destroying it outright and ploughing up its ground, the women of Paris will always tax and rule the world. What a pity it seems, therefore, that there should not be in the minds of such people something more and better than *mere fashion* as a guide, and that there should not be a guiding principle of fitness and beauty, and a constant effort to add to and help the natural forms, and aid the natural grace and ease of their movements. None can do this better, or indeed, so well as the French.

It is not in the little pictures which every year fill the walls of the Royal Academy that we would look for exemplars from natural and living forms and costume, but rather from that larger art which comes of wall painting, and window painting, and roof decoration; and were there any *bona fide* glass-painters now in active work, and practising honestly their vocation by painting on the glass surfaces themselves, we should have a word or two to say to them. As things are we can only hope that some man will take to it and try the art as an art of painting on glass; and here, if he will do so, is a model for him to go by.

All have heard of the complaints that have been made at divers times of the accommodation afforded by our legislative body in the House of Commons for lady visitors. They all come to the House very sumptuously dressed, indeed as if for a grand court ball, and, instead of being ushered into a large state gallery specially fitted for them and their splendours, they are all huddled into a little narrow room, or rather passage, immediately behind the speaker's chair, and over the reporters' gallery, and are visible to the members of the House and to the occupants of the strangers' gallery (a singularly uncomfortable place) through some Gothic traceried and brass-latticed windows. It is, then, behind this trellised and barred work that these fair dames range themselves to see and to listen, and in their bright and gay attire they look for all the world like the painted figures in a genuine painted glass window of the time of the Edwards, only the costume is modern and new, and not old. May we in this place be allowed most respectfully to assure them that they never look better, or more picturesque, or fairer, and that so far from the awkward lattice, which perhaps may annoy not a few of them, taking from the interest of the fair picture, it does all it can to add to it; and fortunate indeed would she be who could find among the ranks of the Academy, or anywhere else, any painter, young or old, famous or obscure, who could succeed in transferring her portraiture to canvas or glass. It is the only and sole example in these modern art-enlightened and progressive times that we can name of glass painting where the costume, the faces, and manner, are alike true to nature and reality and modernism! It is the most instructive living picture in London city, and indicates the art of the future. However dull the "debate" may be—and sometimes it is truly awful—there is always something for the artist's eye in the Ladies' Gallery. It is the fourteenth century again in the nineteenth, but in a new dress, and shows clearly enough that even modern female costume, awkward and bad as it is, can be so managed as to figure grandly and truthfully, even in a cathedral window. Contrast them, those who are interested, with the new windows in Westminster Abbey and S. Paul's Cathedral, where you will find that Moses, and the Prophets, and Apostles, all of them figure in the strange and quaint coverings of the thirteenth century, and in the garbs of middle-age Europe. We would earnestly advise any thoughtful glass-painter to try this new idea, and paint out these skeletons of Apostles and Prophets. The same principles which we ventured to lay down for the improvement of male attire, entirely bad and destructive of form as it now is, apply equally to female costume. The problem is threefold: either to help the natural form of the human frame, and not to hide it in folds of drapery or mere quaintness; or to make a fine and noble dress, *per se;* or to aim at quaintness. Of the three, the last is the most difficult, and calls for the highest inventive powers; indeed it would seem that it must come more of growth than invention. The first is the easiest, inasmuch as the natural form of the human body, and the movements of it, have simply to be fitted, and not impeded in any way, the form showing beneath the dress. In the fine Greek costume of the time of Phidias may be seen the perfection of the dress of women—the body of the dress not disguising the form, and the grand and graceful folds of the lower portion of it harmonizing with it. The neck was bare, and a light, but ample, scarf of fine stuff hung over one shoulder. The arms were bare, as also were the feet. No wonder that Phidias never bethought himself of, or may be threw away, the "anthropomorphic element" in art; the poor man found all his work cut out for him in nature, and truly she taxed to the full his very utmost powers.

NOTES FROM NEWCASTLE-UPON-TYNE.

(From a Correspondent.)

(*Continued from page* 220.)

If the new National and Provincial Bank, to which I referred last week, with (as far as can yet be seen) its stereotyped composition and common-place details, is a grand opportunity for the display of Gothic life and power thrown away; there is a parallel to it in the case of the new Mechanics' Institute. This is an Italian building, with a façade more than twice as high as it is broad, in fact a mere slice of frontage to the street, standing completely isolated from other buildings, and intended always so to remain. Surely such conditions as these pointed most emphatically to a Gothic treatment as the best under the circumstances. I am far from bigoted in my adherence to Mediæval architecture. I am able to see and appreciate beauties in Classical styles, but I hold it an incontrovertible maxim that for a Classical building it is before all things necessary that it should have *breadth*, and in the Mechanics' Institute there is only extreme narrowness. For a Gothic building height is the great desideratum, and the Mechanics' Institute has great proportionate height. Besides, and what makes the matter still worse, the neighbouring buildings are Gothic. On the one side there are two chapels, one Early

English, the other Decorated; and on the other side is the "Weaver's Tower," a remnant of the old town wall of Newcastle, sadly mutilated, it is true, but still a memorial of the middle ages. Thus the site and the necessary proportion of the front elevation both seemed to call for the erection of a Gothic building. But these reasons have been disregarded, and consequently the Mechanics' Institute is a piece of Italian work quite out of place with its surroundings, and so disproportionately tall and thin as to destroy in itself those good qualities which it possesses as a Classical design, but which to be developed properly must have *breadth* as their predominant characteristic.

There are not many attempts at polychromy in our buildings at Newcastle. They might easily be numbered on the fingers of one hand. Whether it is the plentiful supply of good stone, or the dreaded effects of the proverbial smoke of the town, that is the cause of this dearth I will not venture to say, but it is refreshing to find one or two recent works having variety of colour for their prevailing characteristics. One of these, situated in Pilgrim-street, and used as an auction mart, offices, and shops, is particularly successful. By means of red brick, local stone, and encaustic tiles, a most pleasing and harmonious result is arrived at. The whole, though it cannot be called a "monumental" building (for in the Newcastle atmosphere this "thing of beauty" will not be "a joy for ever"), is still a very good specimen of that class of street architecture to which it belongs, "a *style* without a name." The faults of the building are the somewhat shabby wood fronts to the shops on the ground floor, and the solid pier instead of the desirable void or window space in the centre of the elevation. This latter fault is repeated in another work (by the same architect I believe) at present in progress, namely, the new front of an old house occupying a commanding position in Westgate-street. Here the materials used are brick and terra-cotta, perhaps the only instance of the use of the latter in Newcastle. The whole front is very flat in appearance. A somewhat startling effect arises from the use of dark brown bricks in the main cornice as compared with the white bricks and cream-coloured terra-cotta used in all the other parts above and below. Although this sensational feature of the building may not deserve utter condemnation, it cannot be awarded praise. It is too *outre* to be pleasing. At a distance it seems a broad flat black band drawn across the front; the component parts of the cornice can only be distinguished when close at hand. Of the design of much of the terra-cotta ornament I cannot speak very highly. Built expressly for the display of that material (the proprietor manufacturing it), it seems not unlikely that the work should strive too much after effect. Without being meretricious, the ornament is frequently very paltry. The blue vitrified inlay (if such be the term to use) is in most cases the reverse of graceful, and when placed above a certain height quite non-effective.

Within a very short radius in the western part of Newcastle are several buildings worthy of note. The central point is the beautiful little church of S. Mary the Virgin, with its exquisite proportions and lofty spire, the latter perhaps too large for the rest of the building, and suggesting the descriptive phrase, "a spire with a church to it," rather than "a church with a spire." This edifice, situated in Ryehill, forms the chapel of the hospital of the same name; and the almshouses of the brethren, picturesquely and modestly treated, stand south of the church. Close at hand, too, is the school-house connected with the charity, the whole group forming a most complete establishment, eminently satisfactory in an architectural point of view. Quite recently, however, the block of buildings has been added to and enhanced by the erection of the new grammar school, on a site to the west of the hospital grounds. This building is a large and handsome one, and affords suitable accommodation for the celebrated Royal Free Grammar School of Queen Elizabeth, which was for long so ignobly provided for in an ordinary dwelling house in a confined part of the town. The new building includes a master's residence, and apartments for boarders, &c. It is Decorated Gothic adapted to the domestic and scholastic nature of the establishment, and assorts well with the neighbouring buildings. The tower, rising from the centre of the front above the main entrance door, is the least happy part of the design, and (but of course this is no fault of the architect) looks directly along a dirty back street a few hundred yards distant. If a little more attention had been paid to the axiom, already referred to in these "Notes," that the centre of each distinct portion of a design should be a void and not a solid, the result would have been even a more pleasing edifice than it is.

Near to the Grammar School is a new Chapel exhibiting some good Gothic details, but spoilt by the glaring green sheet glass with which the windows are filled. Although galleried inside, there is no external evidence of that fact.

Closely adjoining this chapel a Masonic Hall is to be built. The design was selected in competition, and, as too often happens, its adoption is an injustice to the unsuccessful architects. The projectors specified a certain amount of money, and emphatically stated that the building was to cost no more; also, that if any design, however excellent in other respects, was found not to comply with this condition, it should be immediately rejected and the next in merit considered. Notwithstanding, the design selected was, I believe, the most expensive of the lot. The author, I am told, confessed the probable extra cost in his report. It was, however, accepted, and will, no doubt, be carried into execution.

In Ryehill is the Baptist Chapel by Cubitt, illustrated some years ago in the Building News. Near to it is another chapel, so utterly execrable that the building sites adjoining it have remained vacant for years. No man has had the courage to approach so hideous a structure, knowing full well that houses built beneath its loathsome shadow would neither let nor sell. And yet the building was designed by an architect!

Of only a slightly less abominable nature is a "Christian Meeting House" in Gloucester-street, not far from Ryehill. And what grieves the man of taste more in this case is the knowledge of a story I heard some time back. A design was prepared for the building by a Newcastle architect, which provided for a simple and solemn Early English edifice. The architect stated the sum at which he conscientiously believed his design could be carried out, and as this was above the committee's idea of the proper cost, his services were dispensed with, and those of some builder's clerk, or "lad with a taste for drawing," retained instead. The result is a thoroughly wretched building, erected at an expenditure, I am told, actually within a trifle of the professional architect's estimate for the realisation of his design.

Close to the last-mentioned abortion is the new "Holy Catholic and Apostolic Church," a building that deserves praise for its genuine simplicity. Parts of the open-timbered roof are somewhat clumsy, but this blemish can be overlooked when the rest of the building is so admirable. Some sham groining in the vestibule is, however, sadly inconsistent with the truthfully displayed construction of the other parts.

An iron church has recently been put up in Newcastle—the first and only one in the town. It is a second-hand structure, and was brought down from Pimlico, where, I am told, it was visited by people from all parts of London and its environs, because it was so—excessively ugly. Ugly its exterior is beyond the shadow of a doubt, but luckily it is well hidden in its present position by high walls on all sides. The interior, however, is neat and very suitable for a temporary church.

(*To be continued.*)

◆

TOWN CHURCHES.*

By Pearson Hayward, Esq., Architect.

(*Concluded from page* 204.)

IRON, as a building material, has of late years entirely superseded timber in the construction of roofs of large span over railway stations, &c.; indeed, I think we may safely say that a roof of the span of the new Midland station, or of the new station at Cannon-street, would be impossible in any material save iron. There is, therefore, practically no limit to its capacity in this respect; and I certainly can see no reason why a material, in universal acceptance for secular work, should be found wanting when applied constructionally to ecclesiastical purposes. We are, I think, gradually emancipating ourselves from the idea that we, in this 19th century, should do nothing in Gothic architecture for which a precedent cannot be found in the practice of our forefathers of the 12th, 13th, or 14th centuries. Can we suppose for an instant that if these men,—strong, vigorous, practical, as they were, to say nothing of their other qualities,—had known the power of iron as we know it, that they would not have mastered it, and made it do mighty work? It remains, then, for our eminent church architects, possessing so many advantages both of skill and science that were unknown to their predecessors, to strive their utmost to turn them to account, and this constructional use of iron for ecclesiastical purposes is one of those problems that we as a body, would do well to study.

Hitherto almost the only constructional use to which iron has been employed in ecclesiastical work is in the occasional substitution of iron columns for stone pillars to support the arches that separate nave from aisles in our churches, on account of the smaller diameter of which they can be made, and consequent lessening of the obstruction to sight and sound. But it is this very inherent strength in the material, and the consequent possible tenuity of iron columns, that always make their employment as supports to heavy brick or stone arches so very unsatisfactory; unless, indeed, the columns are coupled or clustered together, which would bring them to nearly the same diameter as stone pillars. I certainly, however, must not forget to mention, as an example of the constructional use of iron, that beautiful specimen of ecclesiastical art, the *iron church*, which, as it is at present designed, may, I think, emphatically be called "cheap and nasty."

The last plan I have to suggest is that shown in the accompanying plate, where a series of richly moulded stone ribs, brought down upon piers projecting very slightly beyond the internal face of the wall, support a barrel vault of concrete or rubble, the external face of which is formed into a regular slope, on which the tiles would be directly laid, the whole forming one homogeneous covering, impervious to heat or cold, and indestructible by fire, similar to the vaults peculiar, I believe, to the ancient churches in Jersey.

If the walls were strongly buttressed, and the lateral thrust brought as low as possible, I believe there would be no practical difficulty in constructing such a vault even of wide span, and the cost would certainly be less than that of groining of the simplest form, with timber roof over it. Of course, this description of roof would need the help of coloured decoration, either constructional or applied, to relieve the comparative plainness of the church; but I believe the general effect of such an interior would be very striking, with its long succession of lofty arches, which would have the effect of breaking up the great mass of ceiling without in any way interfering with sight or sound, whilst the vault itself, and the large extent of wall surface, would afford a grand opportunity for artistic decoration.

The rest of the design is sufficiently explained by reference to the plate. It will be seen that the windows are lofty in accordance with the principles I have mentioned, and that below them is a series of panels intended to be filled with subjects in mosaic, illustrative of Old and New Testament history. The choir is surmounted by an octagonal lantern with a domical roof, intended as an attempt, however crude it may be, to translate into 13th century Gothic, a feature which I have always regarded as one of the great glories of architecture. I beg my audience to understand that this design is only intended as a "suggestion" sketched out from an idea that occurred to my father from his familiarity with the churches in Jersey, that the rude, rough barrel vaults which are their characteristic feature, afforded a type which might, by modification and improvement, be turned to useful account for purposes of this kind.

Having thus attempted to meet the great difficulty involved in the form of church we have been last considering, viz., naves of wide span without aisles, I shall only trouble you further with a few general remarks, in addition to those I have already made, that would as well apply to the usual type of our town churches, as to any abnormal one.

Allusion has already been made to the deleterious effects of town smoke on architecture, both as regards the actual decay of stonework, and the universal griminess which speedily reduces to one uniform tint everything exposed to it.

It was urged with some force by a correspondent in the *Builder*, some time since, that by encasing the fronts of our houses and public buildings with glazed tiles, this dinginess would be entirely done away with on account of the ease with which they could be washed: and that, even supposing them to be applied only to the ordinary London house, which the writer considered might easily be done, to say nothing of buildings specially designed to receive them, our streets might actually look clean and bright.

---

* Read before the Exeter Diocesan Architectural Society in 1868.

Much, I think, is to be said in favour of the notion, but then such encasing must be done on a regular and artistic system, and not left to the individual caprice of every house-owner. There would be many practical difficulties in the way of its general adoption; but there seems to me no reason why terra-cotta, which as we know is impervious to the attacks of a London atmosphere (perhaps the severest test any building material could have), should not be more freely used than it has been, both in secular and ecclesiastical architecture. Its merits, however, are beginning to be recognised, and a year or two ago I saw a church by Messrs. Banks and Barry in process of building, in the classic region of Barking, where terra-cotta entirely took the place of stone in the window tracery, columns, arches, &c., with by no means an unpleasing effect. It has also been extensively employed by the same architects in the new Dulwich college. Of course the use of a new material would require special study to develop its resources and apply them to the best advantage, but that it is a great addition to our list of building materials, there can, I think, be no doubt. In all cases, however, bearing in mind the impurity of the atmosphere in our towns, in spite of the "Smoke Consuming Act," in whatever material we work, all delicate carving or modelling, and minute detail, on the exterior of our buildings, is only so much waste of thought and labour, and we must be content to trust to proportion and broad masses of light and shadow for our architectural effects.

Next comes the question of seating the congregations that are to be accommodated in these town churches, supposing, as a matter of course, that they are free and open to all; and I have little hesitation in upholding the use of chairs in preference to fixed seats. In the first place, they are comparatively inexpensive, and therefore, in building a new church, by using chairs there will be so much the more money to spare for what more specially conduces to the honour and beauty of God's House; and besides this, they are *elastic*, so to speak, for they can be turned and twisted about in any manner that may best suit the congregation, whether it be large or small.

One feature in church building (and this applies with equal force to both town and country churches) ought never to be lost sight of, and it is one which I am afraid is too often neglected by the generality of our modern architects. I mean the proper subordination of the exterior to the interior. How often do we see in our new churches an elaborate and richly ornamented shell which leads us to expect an interior of still greater richness, instead of which we find it bare and cold and starved.

Surely the converse ought to be the case. In the natural world the husk of the nut is merely the needful external protection to the rich kernel within—so should it be with our churches in regard to this general principle. As Mr. Street has well observed in a paper on the same subject, that was published some years ago in one of the magazines, and in which I confess myself indebted in the present instance, "Old architects were often careless about the exterior of their churches, never on any account about the interior; and further, it sometimes happens that the noblest interior almost involves an unsightly or unpicturesque exterior."

Let then our churches depend chiefly on symmetry and dignity of outline for their external effect; but let us lavish with no niggard hand on the interior of God's House all the wealth of art and imagination with which He has endowed us.

Lastly, if our churches be fair, so should the services held in them be so likewise. Frequent should they be, to enable each and all to join in them; musically beautiful should they be, as shadowing, however faintly, the never-ending song of praise above; and, above all things, *hearty* must they be, in the highest sense of the word, as expressing that common faith and hope which should bind together in one the "Church Militant here in earth."

◆

THE EARTHQUAKE AT MANILA.

CORRECT accounts of great natural phenomena have become of great value to science, especially as in the case of earthquakes, hurricanes, &c., the tendency of narrators is generally towards exaggeration. The stories which appeared in the European and American papers describing the effect of the great earthquake at Manila in 1863 were distinguished for the most shameless amplifications. The following memoranda may be depended upon as correct, and it will be seen by comparison that, in spite of the magnitude of the calamity, it was by no means so destructive as has been reported. It is, however, quite probable that had the houses in Manila been built as houses are at home, the destruction would have been quite as great as it was described to be, and the loss of life much greater; but it must be remembered that the better class of buildings in the Philippines are constructed especially with regard to earthquakes, and designed to resist a shock of ordinary force; while the habitations of the natives generally are either entirely of wood or of bamboo and palm leaves. In these, from their elasticity, there is, of course, little danger, except in case of a heavy wave from the bay or a submergence, which are both, fortunately, very rare.

The great earthquake occurred here on June 3, 1863, at about half-past seven in the evening. The weather had been oppressively hot for some days, and fears were entertained on this account. In addition to this excessive sultriness, I observed that ridges of black clouds covered the sky, and that they appeared to lie very unusually *low*. The commotion began with a slight horizontal movement, which was almost immediately followed by violent jumping shocks and an irregular *twisting* motion. By these latter, the whole of the damage was done, though they lasted only a few seconds.

I was coming leisurely out of a narrow street towards a sort of square in front of the parish church, when I felt the oscillating motion, and, as there was a high house on one side and the lofty wall of the church on the other, I ran as fast as I could to gain the open square. As I passed these buildings, fragments of stone and tiles fell on both sides. The tower of the church, an immense mass built exactly in the form of a Chinese pagoda, gave way, and the greater part of the three upper stories came thundering down. The sound of falling walls and brick partitions of the houses produced a noise exactly like platoon firing. As, in circumstances of such extreme danger, few persons are cool enough to count seconds, I am unable to say how long the great shock lasted, but as it was over by the time I had run about eighty yards it will be seen that the duration was very short. The tremulous motion of the earth continued for some time, however, and there were several slight shocks during the night.

On reaching the square, the most extraordinary sight presented itself. The whole street was literally covered by people who had rushed out of their houses and prostrated themselves on the ground in prayer. The Chinese in the shops, however, did not seem to care about anything further than picking up such objects as had been thrown down, or in stopping the dangerous vibration of the glass lamps which were suspended from the ceiling. As a rule, a Chinese laughs when there is an earthquake, not from contempt of danger, but rather from a brutal ignorance.

Looking towards the church lay a large pile of ruin of the great tower, and in the opposite direction, through the long street of the Rosario, was a dense white cloud of lime dust from the fallen and falling buildings, which, illuminated by the street lamps and the numerous lights in the shops, produced a very weird effect. This was the "mysterious white cloud" which was seen from the ships in the bay, hovering over the city, and which gave rise to many absurd stories.

As soon as the first great commotion ceased, I returned to my house not a little anxious for its safety, but being one of the old and solid construction, I found the damage comparatively trifling. In fact, the injuries received by buildings were curiously varied. Houses that *should* have fallen were still standing, and others of the strongest kind were destroyed. It also seemed as if the motion of the earth had been in waves or currents, and some parts of the town were but slightly damaged. In no other way can I account for the parish church of Quiapo, a very solid edifice, being so totally ruined as to make it necessary to rebuild it, when in the same square two very tall and narrow houses, very slightly built and with high stone walls, were scarcely affected, and this within a distance of 70 or 80 yards from the church. The same peculiarity was observed at other points, and makes it possible that earthquake-shocks move in currents like electricity. Another solution might be found in the supposition that the greater firmness of the earth in some places gives greater security from the vibration. A simple oscillation, though strong and lasting for some time, has comparatively little effect upon the houses here, while the sudden *jumping* shock is very destructive. After the great earthquake I observed a newly-built wall, the mortar of which was not yet dry, dislocated in a most remarkable manner, the courses being displaced alternately to the north and south, and still lying diagonally on each other. The same effect of what appears to be a *semi-circular movement* in one direction followed immediately by another in the opposite, is said to be still visible in a church in South America.

Noises, rumbling, or like detonations during earthquakes are so rare here that I have never heard them in an experience of many hundred shocks during nearly forty years. The noise of falling buildings and the awful groaning of the heavy woodwork of the houses is often mistaken for the subterraneous noises common elsewhere. The damage done to the city was unquestionably great. Most of the public buildings and churches were either ruined or rendered useless until repaired. Great numbers of houses were made uninhabitable, but there was nothing like the mischief reported in the mendacious letters which were sent home describing the catastrophe. Manila was not "destroyed, not one stone being left upon another," nor were persons who walked "through what had been the streets" horrified by seeing the "mangled remains of thousands of the wretched inhabitants protruding from the ruins." At the hour when the earthquake came upon us most of the people who inhabited the stone houses were out upon the public drives and walks, so that they escaped with comparative immunity. The natives in their bamboo houses were safe, and the real loss of life was principally from ruins falling on people in the narrow streets. Less than 1,000 persons were reported as killed. The greatest number who perished in one spot was in the cathedral, in which a religious celebration was going on, but fortunately even there the assembly was comparatively small,—a fact which was lamented, just before the building fell, by one of the clergy, who complained of the growing indifference of the people to their religious duties.

In the country, at some distance from the city, long cracks in the earth were said to have opened, from which a black sand was ejected. The effects of the earthquake are still visible on the churches, &c., of the villages at a great distance from the capital. It is a singular concidence that the effects of the earthquake of 1863 were almost similar to those produced by that of St. Andrew's Day in 1645, by which the city appears to have suffered terribly, nearly all the same buildings being ruined. The history of the Philippines by the Jesuits, gives a very graphic account of the disaster, the particulars of which, with the exception of the violence of previous disturbances in the bay and river,* are curiously like those of the 3rd June, 1863. The shock was nearly at the same hour, 8 p.m. The loss of life (probably from the houses of those days being less solidly built than at present) was very great. A violent earthquake in 1852 occurred at the same hour, whilst that of the 1st Oct. 1869 was during the day, and happened in the midst of a heavy squall of wind and rain. This was looked upon as a remarkable phenomenon, as these visitations are usually preceded by a dead calm, or it suddenly becomes so at the moment. Slight shocks are very frequent, and always excite great alarm, as the heaviest experienced here have been preceded by a gentle oscillation. Although too common at all seasons, earthquakes are said to have always been more frequent about the month of October, at which period the south-west monsoon breaks up.

Immediately after the great earthquake, the terror of the European inhabitants of the city and suburbs became so great that they abandoned their houses, and a great exodus took place, everybody hiring the common Indian cottages of the neighbourhood, for which the natives took care to make them pay handsomely. The price of building materials and labour rose at once to very high rates, and Government, having published what was intended to be a compulsory tariff of the prices of provisions, seizing lime, &c., at the customary prices, caused the greatest scarcity of everything required for consumption or repairs. The immense quantity of rubbish from ruined buildings obstructed many of the streets, and houses which were unsafe, but which could not be at once repaired, obliged the police to close certain streets to prevent accidents, in spite of which several persons perished from falling walls, stones, &c., some time after the earthquake.

---

* Some years ago a singular disturbance as noticed in the waters of the river at Manila, which were violently agitated, and quantities of black mud thrown up to the surface; but no earthquake followed. The water was covered with dead fish.

From the preceding details it will be seen that the direction of motion in earthquakes here is horizontal, vertical, and in a sort of twist, the two latter being the most fatal; and that, dreadful as have been the consequences of these fearful visitations, they have been enormously exaggerated by most persons who have described them.

W. W. Wood.

Manila, 24th July, 1870.

Note.—Since the establishment of the Municipal College under the direction of the Jesuits, a register of the occurrence of earthquakes, the direction of motion, &c., are carefully kept, as well as the most elaborate meteorological observations made by a splendid automatic apparatus, constructed in Paris.

◆

ANTWERP CATHEDRAL.

ANTWERP Cathedral, the subject of one of our illustrations, is one of the most remarkable cathedrals in Europe, and one of the finest specimens of Belgian Pointed architecture. It is 390ft. long by 170ft. wide, and covers an area of 70,000 square feet. Its plan is somewhat peculiar, it being divided into seven aisles. Thus intricacy and picturesqueness are given to the perspective, but much effect is lost by the want of harmony among the parts and of proportion. It was commenced about 1366, but was not completed till 1518. Its magnificent door with its one finished tower 406ft. in height, was not commenced till 1422. "Although," says Mr. Fergusson, "from the lateness of its date it is impossible to be satisfied either with the outline or the detail, it is still so gorgeous a specimen of art, and towers so nobly over the buildings of the city, as to extort our admiration, and a man must have very little feeling for the poetry of art who can stop to criticise it too closely." An unfinished design is not generally pleasing, but in this case it may be questioned whether the second spire if completed would add to or detract from the beauty of the structure.

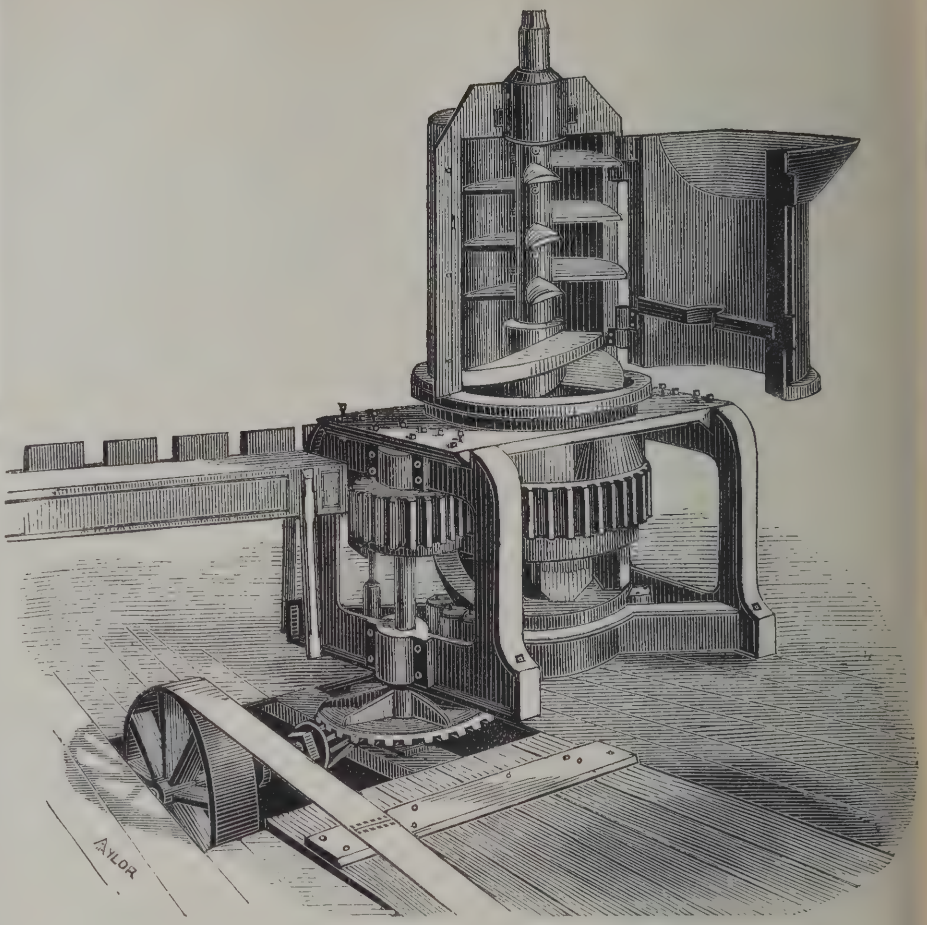
With regard to the internal arrangements, the above quoted authority is of opinion that "if the length of the nave had been divided into ten bays instead of seven, as at present, and the central aisle had been at least ten feet wider, the apparent size of the church would have been greatly enlarged." Even then, however, it would have wanted height, and the degeneracy of its details cannot be redeemed.

◆

CONFUSION IN THE STREETS.

NO sooner has the repairing of any street in the Metropolis been completed than the Gas and Water Companies seem to mark that street for their prey, and forthwith proceed to tear up the evenly-laid stones. The authorities too, however at variance on other points, always seem to manage things so that the whole of one long Metropolitan route shall be repaved. Thus recently, on an omnibus journey to Stratford, we found the Strand "up." A detour round Wellington-street, Long-acre, Drury-lane, and the back slums into Chancery-lane. Proceeding eastwards we found Cheapside up, and were thankful for the completion of Queen Victoria-street, which enabled us to avoid another ten minutes' delay. The exasperation of the driver may be imagined, and on reaching the Exchange he gave vent to his feelings, exclaiming, "It's a pity Cornhill ain't up too, I should only have had another ten minutes round Lombard-street and Fenchurch-street."

The Strand is fortunately finished; Cheapside, however, is to be patched up, re-opened, and then closed again. At a meeting of the City Commissioners this week, the Chairman said the members of the Court was aware that during the last week Cheapside had been much cut up by the water and gas companies laying new pipes. It was certainly unfortunate that gas and water companies put off their works till the last moment, and the consequence was that there must be a sinking where the trenches had been dug. Under the circumstances, the Asphalte Company thought it would be better to delay putting down any more asphalte for a month, until the subsidence had taken place, and they applied for an extension of their contract till that time. The application was agreed to, and the inhabitants and omnibus drivers are to have a month's respite, to be followed by another month's confusion.



THE UNITED STATES BRICK MACHINE.

The time taken by the contractors employed is something to be wondered at. One instance deserves especial mention. The north side of Lincoln's-inn-fields is being repaved. It has been closed for six weeks, and will not, apparently, be completed for another fortnight.

◆

IMPROVED BRICK MACHINE.

THIS machine was patented February 23, 1870, by the United States Brick Machine Company, of Chicago, Ill. The machine can be driven by a lever sweep propelled by horses as well as by steam or water power, though when driven by horses it cannot, of course, be worked up to its full capacity, the latter being limited only by the practical speed of the machine and ability to supply it with clay.

It has been found, according to the *Scientific American*, that in practical working a speed that will turn out sixty to seventy bricks per minute is about what can be done with two men to shovel in the clay, no attendance being required except to shovel the clay into the pugmill and hack up the bricks as they are carried away by an endless apron.

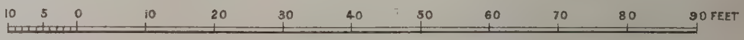
The pugmill operates precisely like the old pugmill, tempering the clay before pressing it in the moulds. The pressure is adjustable to compress the bricks more or less, so that the proper density may be secured. The bricks may be pressed so as to be hacked up immediately. The commonest clay may be used, and it is claimed that as perfectly formed bricks are made on it as can be done with the same quality of clay on a hand machine, that on subsequent baking the poorer sorts of clay will yield on the average enough perfectly-faced bricks for the fronts of ordinary buildings, while with the finer clays bricks of the finest finish may be made at the same rate as coarser ones. The machine is driven by a powerful and heavy gear placed below and on the shaft of the pugmill. This gear is driven by a pinion on the pulley shaft, which takes its power from an engine or water wheel. If the mill is impelled by a lever sweep from the top of the shaft no toothed gears are necessary.

In the body of the large gear are formed, at proper intervals, moulds which receive the tempered clay from the pugmill as it is forced down into them by a powerful propeller screw fastened to the shafts below the knives, which do the grinding and mixing. In each of these moulds—which are steel-faced—runs a steel or brass-faced follower, having at the bottom a roller wheel, which rolls up in a fixed track, elevated at the proper points, the action of which is to force the follower up, at the proper times, to compress the bricks, and also to thrust them out of the moulds when they have arrived at the proper point of the revolution. As the bricks are thrust up out of the moulds they pass on to an endless belt or apron, and are conveyed away to be hacked up. There is nothing whatever about the machine which can get out of repair. Its parts are few in number, and so constituted and arranged that they can be made of a weight and strength which ensure their power of endurance, and no skilled attendance is required to run it. All the work can be done by boys except the shoveling of the clay. Any complication liable to interfere with the perfect and permanent operation of the machine or to lessen durability is avoided.

◆

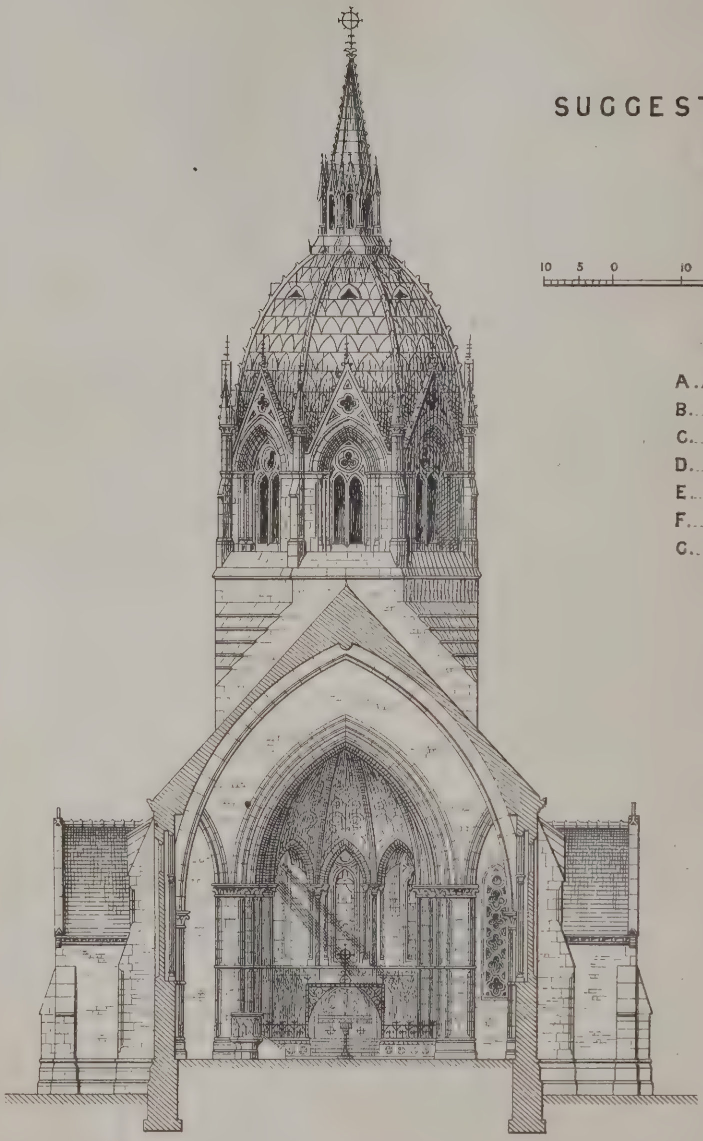
An Archæological Society for Dorset.—The *Dorset County Chronicle* suggests the establishment of an archæological and natural history society for Dorset. It is to be regretted, says that journal, that in a country so rich in objects of interest to the archæologist and antiquary some means has not been devised for developing its fertile resources. Up to the present time the county lags behind its neighbours in reaping the advantages which accrue from the study of local history and landmarks. Somerset and Wilts have each lately seen successful meetings of archæological and historical societies of their own, while Dorset, with equal, if not greater, advantages, is still without any embodied power of antiquarian work.

SUGGESTIONS FOR A TOWN CHURCH.

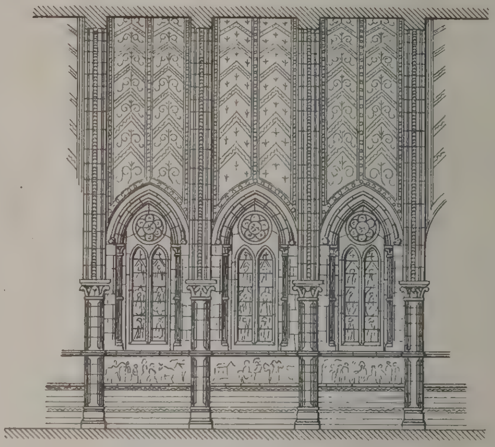


REFERENCE TO LETTERS ON PLAN

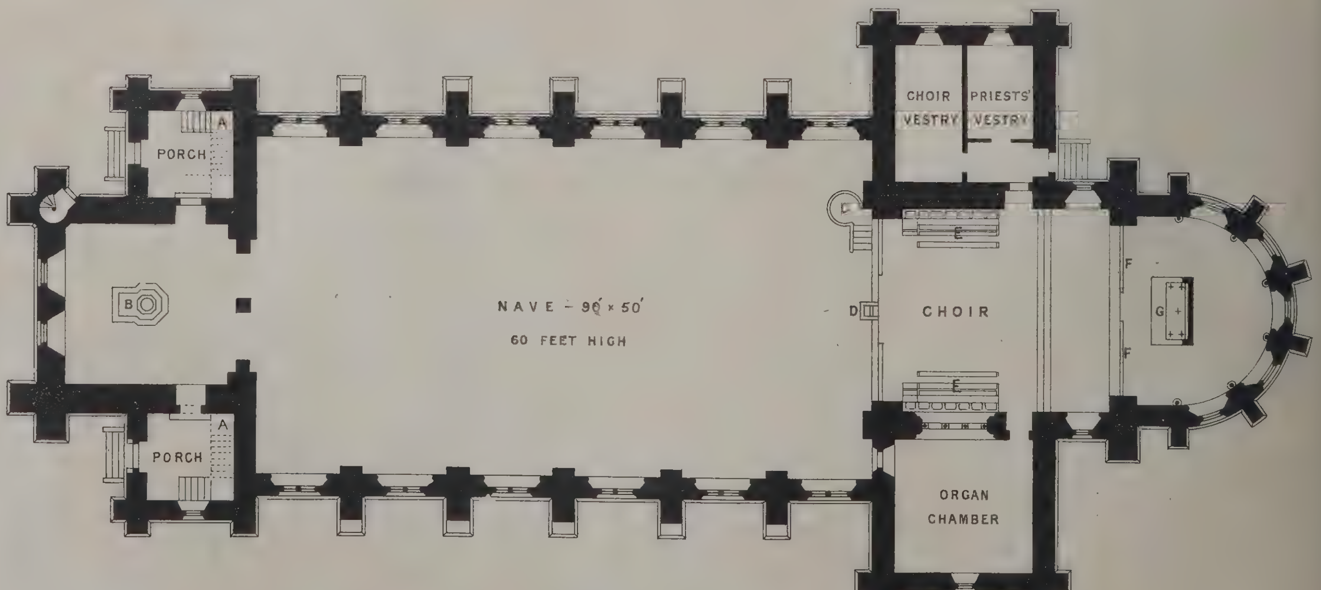
A.A.	*Stairs to Gallery at west end.*
B.	*Font.*
G.	*Pulpit.*
D.	*Lectern.*
E.	*Choir seats.*
F.	*Altar rail.*
G.	*Altar.*



TRANSVERSE SECTION, LOOKING EAST.



PART OF LONGITUDINAL SECTION



PLAN

Pearson B. Hayward Archt.
Exeter. Decr. 1869.

Geo Green, Lith

Printed by Whiteman & Bass.

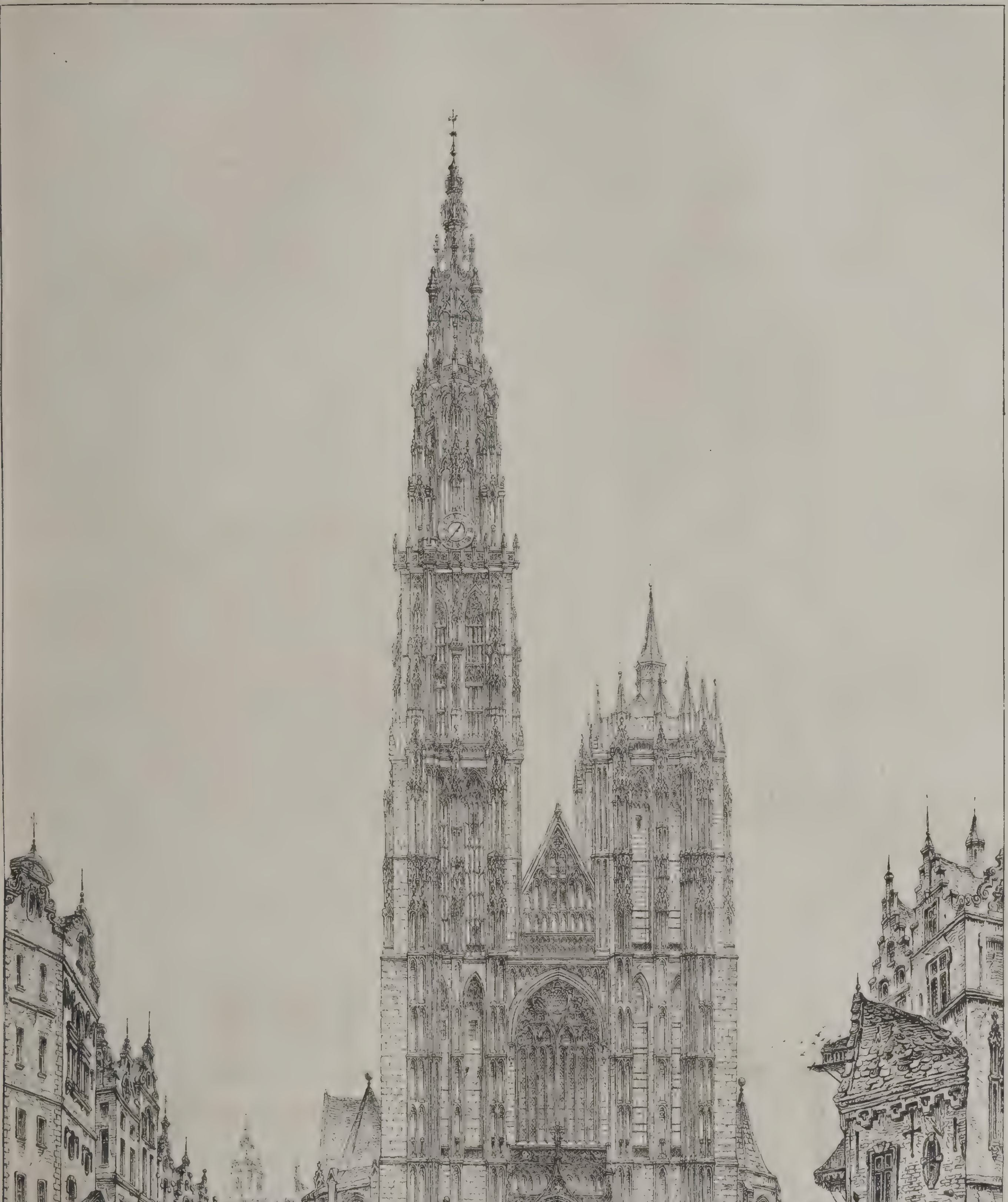


Photo-Lithographed by Whiteman & Bass London

Cathedral - Antwerp.

Civil Engineering.

ON THE CALCULATION OF EXCAVATION AND EMBANKMENT TABLES FOR THE USE OF RAILROAD ENGINEERS.

By Wm. H. Griffin, C.E.

ENGINEERS frequently find themselves, when in the employment of a new company, in want of tables, adapted to such bases and slopes as are not contained in any published tables. The following expeditious and easy method of calculating earth-work tables has been familiar to the writer for more than twenty years, and it is believed is now published for the first time.

As a preliminary to the method, I will take the following equation :—

$$y = a\,x^m + b\,x^{m-1} + c\,x^{m-2} + \ldots + p\,x + q,$$

and explain that if we give to x a succession of values, increasing according to an arithmetical progression, the values of y will increase according to a law which is easily ascertained. If we give, in the foregoing equation, to x successively the values 0, 1, 2, 3, 4, &c., we shall ascertain the corresponding values of y. Then, taking the differences of the values of y, we will obtain the first order of differences, generally designated D_1. Then, taking the differences of the differences, we will obtain the second order, designated D_2. And again, by taking the differences of the second order we obtain a third order, and of the third order a fourtb, and so on, until an order is finally arrived at that is constant. If m represents the highest exponent of the equation, then the mth order of differences will be constant. An equation of the fifth power giving five orders ; one of the fourth power fourth orders; a cubic equation three orders, and a quadratic equation two orders.

Upon the above the principles, let it be required to calculate an excavation table, for a base of 20ft., with slopes of ¾ to 1, and for 100ft. lengths. Let y represent the cubical contents in yards, and x the depth of cutting in feet and tenths of feet. Then we shall have this equation :—

$$y = \frac{100}{27}(20 + \tfrac{3}{4}x)\,x = \frac{100}{27}(20\,x + \tfrac{3}{4}x^2)$$

$$= 3{\cdot}703\,(20\,x + \tfrac{3}{4}\,x^2 = 74{\cdot}074\,x + 2{\cdot}777\,x^2.$$

Now give to x a regular succession of values, as 0, 1, 2, 3, &c., and we will have

For $x = 0$, $y =$ 0·
For $x = 1$, $y =$ 76·851,851.
For $x = 2$, $y =$ 159·259,259.
For $x = 3$, $y =$ 247·222,222.
For $x = 4$, $y =$ 340·740,740.

Take the differences of these values of y and the differences of the differences, and we will have

D_1	D_2
76·581,851	
	5·555,555.
82·407,407	
	5·555,555.
87·962,962	
	5·555,555.
93·518,518.	

We now rule four columns, designated respectively x, y, D_1 and D_2, and having inserted the figures already ascertained, we will add the figures in column D_2 to the previous ones in column D_1 and then those in column D_1 to the previous ones in column y, and will thus ascertain the value of y, for the corresponding value of x, or the cubical contents, for the particular depth.

x	y	D_1	D_2
0	0	76·851,851,851	
1	76·851,851,851	82·407,407,407	5·555,555,555
2	159·259,259,259	87·962,962,962	5·555,555,555
3	247·222,222,222	93·518,518,518	
4	340·740,740,740	99·074,074,074	
5	439·814,814,814	104·629,629,629	
6	544·444,444,444	110·185,185,185	
7	654·629,629,629	115·740,740,740	
8	770·370,370,370	121·296,296,296	
9	891·666,666,666	126·851,851,851	
10	1018·518,518,518	132·407,407,407	
11	1150·925,925,925	137·962,962,962	
12	1288·888,888,888	143·518,518,518	
13	1432·407,407,407		

In this way we can continue the table to any depth that may be required. If we notice the figures of the decimals in column D_1, we shall see that they are repeated for every ninth foot. This is as it should be, for 5·555 multiplied by 9 is equal to 50,000. Therefore, after the first 10ft. the calculation is proceeded with with much less trouble and difficulty.

To make the calculation by tenths of feet. First find the orders of differences by substituting for x, in the foregoing equation, values 0, 0·1, 0·2, 0·3, 0·4, and the following results are obtained :—

	D_1	D_2
For $x = 0 - y = 0\cdot$	7·435,185	
For $x = 0{\cdot}1 - y = 7{\cdot}435{,}185$	7·490,740	0·055,555
For $x = 0{\cdot}2 - y = 14{\cdot}925{,}925$	7 546,296	0·555,555
For $x = 0{\cdot}3 - y = 22{\cdot}472{,}222$	7·601,851	
For $x = 0{\cdot}4 - y = 30{\cdot}074{,}074$		

Four columns are now again ruled, and we then proceed in the same manner as for whole feet.

x	y	D_1	D_2
0	0	7·435,185,185	
0·1	7·435,185,185	7·490,740,740	0·055,555,555
0·2	14·925,925,925	7·546,296,296	0·055,555,555
0·3	22·472,222,222	7·601,851,851	
0·4	30·074,074,074	7·657,407,407	
0·5	37·731,481,481	7 712,962,962	
0·6	45·444,444,444	7·768,518,518	
0·7	53·212,962,962	7·824,074,074	
0·8	61·037,037,037	7·879,629,629	
0·9	68·916,666,666	7·935,185,185	
1·0	76·851,851,851	7·990,740,740	
1·1	84·842,592,592	8·046,296,296	
1·2	92·888,888,888	8 101,851,851	
1·3	100·990,740,740	8·157,407,407	
1·4	109·148,148,148	8·212,962,962	
1·5	117·361,111,111	8·268,518,518	
1·6	125·629,629,629	8·324,074,074	
1·7	133·953,703,703	8·379,629,629	
1·8	142·333,333,333	8·435,185,185	
1·9	150·768,518,518	8·490,740,740	
2·0	159·259,259,259		

We observe that the decimals again repeat themselves in column D_1, for every ninth foot.

In calculating earth-work tables, after the method here set forth, the calculations should always be made separately, for the whole feet and tenths of feet. The one will be a check on the other, and consequently any error in figuring will be readily detected.

If one should desire to calculate earthwork, for final estimation, with the same accuracy as by the prismoidal formula, it can be done with the tables calculated as the foregoing, and with much more expedition. It is only necessary to add the cubical contents for each end-depth to four times that for the average depth, and then take 1-6th of the sum, and the same result is obtained as the prismoidal formula would give.

Suppose, for instance, that we should desire to know the amount of excavation for a cutting 100ft. long, and 1ft. deep at one end and 9ft. at the other.

The foregoing table gives :—

For 1ft..........	76·853	cub. yards.
For 9ft......	891·666	,,
For 5ft. 439·814 c. yds. which multiplied by 4 =	1759·259	,,
Amount.........................	2727·777	,,

One-sixth of which is 454·629 cubic yards ; exactly the same result as given by the prismoidal formula.

For approximate estimates we can merely average the cubical contents for each end depth, or take the cubical contents for the average depth—the former giving too much and the latter too little.

Take the last amount again :

The prismoidal formula gives ...	454·629	cu. yards.
The average depths give	439·814	,,
The average cubical contents give	484·259	,,

The average depth giving 24·814 yards too little, and the average contents 44·444 yards too much.

In order to show that the law of the differences holds good, for cubic equations, as well as for quadrature, I will take the following :—

$$y = x^3 + 2\,x^2 + 3\,x + 4.$$

Now give to x, in succession, the several values, 0, 1, 2, 3, &c., and arrange a table as before :—

x	y	D_1	D_2	D_3
0	4	6		
1	10	16	10	
2	26	32	16	
3	58	54	22	
4	112	82	28	
5	194	116	34	
6	310	156	40	
7	466	202	46	
8	668	254	52	
9	922	312	58	
10	1234	376	64	
11	1610	446	70	
12	2056	522	76	
13	2578	604	82	
14	3184	692	88	
15	3874			

◆

LOCAL BOARDS OF HEALTH.

MR. W. S. DAGLISH last week read a paper before the Association for the Promotion of Social Science, containing suggestions for an extension or amendment of some of the powers at present given by the legislature to Local Boards of Health. Remarking that the Local Government Act of 1858, based on the Public Health Act, 1848, had worked well, he recommended the enactment by which no person should be allowed to commence to build until he has fully satisfied the requirements of the local authority, which should have power to control rebuilding in cases of buildings erected before the date of the constitution of the district. It was worth consideration whether some power should not be given to the local authority to authorise, *ex proprio motu*, public gas and water companies, or persons proposing to form themselves into such, to pass through private land, and generally exercise parliamentary powers upon proper terms. That the local authority should have the same power as was now possessed by the Quarter Sessions to alter, divert or stop up roads. As the law at present stands, the local authority cannot cut off a few feet from a highway so as to make it straight, and cannot substitute a useless old path for a new road in every way superior. He also recommended that railways, docks, &c., should no longer be rated at one-fourth; the lower scale (if at all) should be confined strictly to agricultural land ; and that the unfairness of the general law respecting paving new roads be remedied. By the acts in force owners of premises abutting upon any new street may be compelled to pay the first cost of sewering, levelling, paving, and flagging, but in case the street is a highway the cost must come out of the general funds, so that property abutting upon what was formerly an ancient path would have its improvements done at the public cost, while the owner of adjacent property abutting upon a street not a highway will have to pay all his own first expenses. Newcastle having a special Act, the owners pay all first cost ; but the owner in a road passing from Newcastle through the local districts of Walker, Wallsend, and Willington Quay, the first cost falls upon the district, but it leaves Willington Quay and passes into the borough of Tynemouth, and at once the special town improvement powers are applied, and no exemption is made. To save the cost of obtaining special acts, he recommended, specially for the benefit of small corporations, that the existing town improvement acts should be carefully examined, and a selection made of all the clauses which appear to apply to small corporations and local boards, and that, somewhat in the nature of the Towns Improvement and other consolidation Acts, every local board, by the act of its adoption, should incorporate such consolidated Act. By this means they would obtain, without cost, in every case many of the advantages of a special Act of Parliament.

Mr. Michael enforced the necessity of consolidating the Local Government and Health Acts, and remarked, in answer to the president, that some of the evils mentioned by Dr. Daglish could be amended by provisional order, without the expense of a special act. He also pointed out the necessity of securing in any amendment of the law such provisions as would give powers of appeal from this or that body, so that there should be no room for the suspicions on the part of individuals that public steps were taken in the interest of private persons having influence in local boards, or that favour was shown in any other way.

Dr. Farr asked whether, if the police were made inspectors of nuisances, confusion would not arise by their being under two masters.

Mr. Leitch, Town Clerk of Tynemouth, said the police acted as inspectors in Tynemouth, and no confusion arose from the arrangement.

SEWAGE AND SANITARY WORKS.

Mr. J. BRIERLEY, C.E., of Blackburn, read a paper on Monday before the Social Science Association, on "Sewage and Sanitary Works," setting forth the result of his observations, and making a series of suggestions which that experience had given birth to. In laying out a sewerage scheme, he remarked that a close inspection in detail of the whole district was necessary, taking into consideration the population and probable increase, the death-rate, the rateable value past and present, prevalent trades, existing works, amount of rainfall and water supply, and the geological features of the district. He laid down the following doctrines: The whole scheme should be laid out, although executed only in sections; main outfalls should be as few as possible; each drainage area should be treated as a separate district; a careful study of the size of sewers would save expense; circular sewers are better than oval up to 2ft. diameter; to save cost storm-outlets should be provided with self-acting overflow; subsoil waters should enter sewers by junctions; the separate system is not generally practicable or desirable, because subsoil water and rainfall help to flush the sewers, though excess would reduce irrigation power. Legislation to prevent stream pollution is imperative; transferring solid matter into streams ought at once to be prohibited, but reasonable time should be allowed to intercept all sewage. Sewers should be constructed of earthenware pipes up to 21in., above that size of bricks; should be laid down in straight lines, and freely ventilated to render the gases innocuous. Scavenging and night-soil removal should be done by corporations, and not farmed; ash-pits should be covered, and kept dry; excreta and other rubbish should be kept separate, and cleansing must be frequent; water-closets must be provided with an ample flush of water, good ventilation, and efficient drainage. Public water-closets and conveniences might be placed underground in large cities. Each community of 30,000 and upwards should have a medical officer of health; inspectors of nuisances should be intelligent, and large communities should be divided into districts, and furnished with an inspector for every 10,000 inhabitants; the death-rate statistics should be localized, so that disease manufactories might be fixed on and improved off the face of the earth. Mr. Brierley illustrated his paper by drawings of works carried out in accordance with his theories.

Mr. Chadwick asked what district met with his requirements.

Mr. Brierley stated that the drainage system of Accrington, in Lancashire, was constructed in accordance with his principles throughout, and answered admirably. For the ventilation of sewers, he explained that he carried the ventilating pipe up to the top of the house. and fitted it with an Archimedean fan. And these vents being numerous, the fetid gases from the sewers became dissipated, without the possibility of becoming a nuisance to the inhabitants.

"THE POST-OFFICE BUILDING TRADES DIRECTORY."

MESSRS. KELLY & CO. have almost a prescriptive right to the publication of directories. Their accuracy, punctuality, and diligence have endued the "London Directory" with an almost official character. We never speak of "Kelly's Directory," but always of "*The* Directory." There is really but one Directory, and Kelly is its publisher. Of course, such success has naturally had its imitators.

Some time ago, either in consequence of or simultaneously with a rather cool attempt to appropriate the materials collected by them for use in other ways, Messrs. Kelly & Co. determined on producing a directory of the building trades of England, Scotland, and Wales. The result is the scarlet-bound volume before us, published at the moderate price of 21s. to subscribers, and 25s. to the public—a moderate charge when it is considered that the book is not very far from being as bulky as the "London Directory" itself. The Directory is as far as possible perfect. Long experience in this branch of compilation has rendered its publishers fully conversant with the best modes of procuring and, what is more important, *arranging* information. Some few inaccuracies in details are, of course, to be expected, and those who detect such are requested to point them out for correction in the next edition.

The book is divided into two main divisions—London and Country, the Country being again separated into two lists—one of trades and the other of places. Reference is thus rendered speedy and simple. Space is never occupied needlessly—a great feature in so bulky a matter as a directory. We are not bothered with long pseudo-advertisements of the lives and doings of the architects attached to their names, nor with the bye-laws and lists of members of provincial institutions. Possibly a little more room might with advantage have been given to the London architectural and engineering institutions; yet, after all, it must not be forgotten that the work is specially intended as a *business* guide. That it will prove a reliable guide we are fully persuaded, and we congratulate its publishers on the production, and its purchasers on the possession, of so very necessary an adjunct to modern business.

Engineers and others connected with the metal and iron trades will be glad to know that another directory, specially compiled for their use, will be ready in a few days.

NEW MORTUARY BUILDINGS.

AT a meeting this week of the City Sewers Commissioners on the adjourned consideration of a report of the Sanitary Committee with reference to the erection of mortuary buildings for the City, the Chairman stated that some time ago the Court authorized the committee to spend £13,000 in the purchase of a site, and the erection thereon of a mortuary. A site had been purchased for £5,000, and £8,000 remained for the buildings. Since then another piece of land adjoining the site had been offered to them for £750, and the question was whether they would purchase it. Mr. Haywood's estimate for the buildings was £9,400, so that, including the additional piece of ground, the total cost would be £15,000, being an increase of £2,000 upon the amount authorized to be spent—namely, £13,000. Some discussion took place upon the subject, in the course of which it was stated that one of the metropolitan parishes had provided a mortuary for £1,000, and an opinion was expressed that £15,000, or even £13,000, was too large a sum to be spent on a mortuary for the City, in which there would be only a very few bodies. Eventually a vote was taken adverse to purchasing the additional piece of land, and the whole subject was referred back to the committee for further consideration.

DUSTY THOROUGHFARES.

MR. W. J. COOPER read a paper before the British Association on "The Use of Solutions of Soluble Chlorides for Laying Dust in Thoroughfares," observing that at the meeting of the British Association at Norwich, in 1868, he introduced the subject of the application of deliquescent chlorides for that purpose. At that time an experiment had been tried in Baker-street, Portman-square, throughout an exceptionally hot season, with most successful results, the surface of the macadam road being purified, hardened, and concreted, and the obnoxious dust prevented from rising. In Liverpool, in the year 1869, Bold-street, Church-street, and Lord-street, were watered with salts during the month of July; the report of the results was very favourable, and the experiments had been continued this year. In many towns experiments had been made during the past season, with various results, according to the composition of the roadways. It was difficult to prove the economy resulting from the use of the chlorides over a limited area, and the Westminster Board of Works, after observing the effect, resolved to extend the experiment throughout their entire district, comprising an area of 250,000 square yards, and no sooner was that course adopted than the economy in labour and water was evident. Mr. Cooper also remarked that the importance in a sanitary point of view of the use of the chlorides had been clearly established, and he argued that an effective method of remedying the evils arising from organic matter deposited on public thoroughfares was daily becoming a matter of serious consideration with sanitary authorities.

THE PREVENTION OF LEAD-POISONING IN WATER.

MR. ALEXANDER GORDON read a paper before the British Association entitled, "How to Prevent Lead-poisoning in Water." He first pointed out that though medical and scientific men had long been unanimous as to the desirability of abolishing lead as a means for the storage or distribution of water used for dietetic purposes, the conviction as to its danger had not yet fully forced itself upon the public mind. The result was that though hundreds and thousands of pounds were spent in obtaining pure water, in a great many cases the water no sooner crossed the threshold of our houses than it became poisoned by means of leaden pipes and cisterns. Various substitutes for lead piping had been tried, but all were more or less open to objection, either from the danger of rust, the want of ductility, liability to galvanic action, or other causes. The only substitute yet manufactured which, while it conserved the purity of the water, was both ductile and cheap, was that invented by Mr. Haines, C.E., and specimens of which Mr. Gordon displayed. It consists of a leaden pipe with an internal pipe of block tin, both having been previously pressed together so as to form a homogeneous whole. By this process the piping retained all the flexibility of lead, while the inner tube of tin was strong and thick enough to prevent any access of water to the exterior leaden pipe. Mr. Gordon stated that wherever the invention had been applied its sanitary value had been found perfect. The manufacture was daily increasing, and its merits were being recognised not only in this country but in foreign countries.

The President said that a number of experiments were made a few years since by the Sanitary Association of Manchester, the result of which, he believed, was that no coating of tin applied in an ordinary way was sufficient to prevent the action of the water on the lead; but, according to the plan explained by Mr. Gordon, a thicker coating of tin appeared to be applied, and that seemed to be a solution of the difficulty.

Mr. Gordon (in answer to the president) said that the price of the lead piping encased with block tin was not greater than that of lead piping.

AN EXPENSIVE SHAFT.

ON Monday and Tuesday week, the members of the Dudley Mining Institute visited Bagillt, near Holywell, on the North Wales coast, to inspect the famous Beltisfield Colliery sinking, where, by the aid of a new pneumatic apparatus and divers, a shaft has been sunk through the sea-water, and is now proceeding in the coal measures with great satisfaction. The difficulties experienced in sinking this shaft required to be surmounted by no ordinary skill, and are worth notice.

In order to get a site on which to sink this pit, it was necessary to bank off a portion of the sea by a strong wall. This done, the new pit was commenced on the beach, the subsoil of which consisted of 60ft. of running sand, 10ft. of clay, and 19ft. of gravel, containing large boulders, and the whole full of sea-water; and it was through this saturated subsoil the pit had to be put. The pit top, until it was raised, was under level of high-water mark. The first operation, it appears, was to build a cylinder of brickwork 3ft. thick, with cement, upon a circular iron driving shoe, and 20ft. diameter in the clear. This cylinder of brickwork, by adding on to the top of it, and by otherwise weighing it, was pressed into the sand until 69ft. of the cylinder was pressed into the beach. As much as 800 tons of dead weight was applied on the top of it, until, what with the external pressure and the resistance of some huge boulders against the leading shoe of the brick cylinder, further progress was stayed. After this the ordinary cast-iron tubbing had to be resorted to, of less diameter of shaft than the brick cylinder, until the shaft reached the laminated coal measures, upon which the ordinary wedging curb is now placed, and the shaft comparatively dry. During the time of the pressing down the brick cylinder and putting in the cast-iron tubbing, the earth from the inside was got away by aid of the pneumatic apparatus without pumping the water out—or, in other words, the sinking was done under water. The pneumatic apparatus consists of a powerful air-pump and cylindrical tube of cast-iron, 6ft. diameter, put together as the work proceeded in 6ft. lengths, with an entrance valve door at the top, through which the sinkers had to pass to their work. The men once inside the tube, and the air pumps set to work, the water was immediately forced out of the tube, so that the men could descend the tube inside, by ladder-steps, down to the lower edge of the bottom of the tube, which was made to rest on the *debris* to be removed, when the men would at once commence to send it up inside the tube. By this means, working with lights, and aided by divers working entirely in the dark, under water, the cast-metal tubbing was placed, after which the water was pumped out, and kept out of the inside of the shaft by two 18in. pumps, 2ft. stroke, working 18 strokes per minute. Workmen were then sent down to perfect all the joints and render it water-tight, and in a short time this will be effectually done. The pressure of the air in which the workmen at one stage of the working had to work in was as much as 30lb. to the square inch, and some of the workmen suffered inconvenience. The sinkers worked four hour shifts (per day), 4s. for four hours; the divers worked four hour shifts (per day), 21s. to 6s. per four hours. It has occupied about 2½ years to sink the 40 yards, but now that the regular strata are reached the sinking will proceed rapidly. The shaft is now down about 40 yards, and will be 17ft. 4in. in the clear when finished, and about 160 yards deep to the five-yard coal.

A VISIT TO CONWAY CASTLE.

A NUMBER of the British Association excursionists who visited Llandudno and neighbourhood on Thursday week proceeded in carriages to Conway, and they were guided through the castle by Mr. H. Vale, F.R.I.B.A., president of the Liverpool Architectural and Archæological Society, who pointed out the various objects of interest. Arrived in the banqueting-hall of the castle, Mr. Vale delivered an exceedingly interesting address on the old building. He said:—We may consider the reign of King Edward the First the epoch of the grand style of accommodation and magnificence combined in castle architecture. When engaged in the crusades "he surveyed" with satisfaction, as Dallaway observes, "the superior form and strength of the castles in the Levant, in the Holy Land." The introduction of parti-coloured stone in the quoins and dressings of Conway Castle, as also in Carnarvon, serves to strengthen the idea that we owe these castles to such an Eastern origin. This stronghold is one of those Edwardian castles, of which kind there were five in North Wales, namely, Beaumaris, Carnarvon, Caerphilly, Harlech, and Conway. The chief characteristics which distinguish these Edwardian castles from the earlier Norman ones are the Great Hall of Audience or Ceremony, and the introduction of inferior towers and overhanging turrets, bartizans or bretises, projecting from towers or angles, and the more frequent herse, or portcullis. The earlier Norman castles were without these portcullises, or only protected by one, but at Beaumaris, Carnarvon, and Harlech three exist under every gateway, and at Caerphilly they form obstructions at the end of every passage or mural gallery. Conway was protected by one or more portcullises. The Audience-hall at Conway was unusually splendid; the ribs of the stone arches of its roof may still be seen. This apartment was 130ft. long, 30ft. wide, and 20ft. high. The ground-plan of this hall conformed to the bend of the outer wall, adapting it to the nature of the site. Beneath the hall was extensive cellarage for ammunition and provisions. The other characteristic of the Edwardian castle, namely, the turrets rising above the larger towers, are well accentuated at Conway, and served as staircases leading to the summits of the larger towers, the latter being 40ft. in diameter. Another special feature at Conway is the beautifull little groined oratory or private chapel in the Queen's Tower, the absence of a fireplace in which apartment has pointed to its appropriation as a chapel. Conway Castle was completed by Edward I., in the year 1284, and H. d'Earleton, who designed Carnarvon Castle, is supposed to have been its architect, although the characteristic features to which I have referred are said to have been copied by Edward from some of the fortresses in the East, whither he had gone in the year 1270 as the leader of the English crusade. In 1282 he subjugated the Welsh under Llewellyn, and proceeded to construct his castles in Wales, the leading features of which generally may be summed up thus:—To render the entrance or gate at once magnificent and impregnable; to secure the garrison and to enable them to annoy the besiegers; to delude the besiegers to attack the strongest parts by given them the appearance of weakness; to put their prisoners, provisions, and implements of war out of the reach of danger; to convey the engines of war to any part of the castle with ease and expedition; to communicate intelligence to any part of the building; to supply the garrison with water; to convey away the smoke and sewage; to provide a commodious and safe habitation for the king and his household; all which conditions will be found to have been met in the Castle of Conway and other Edwardian fortresses. A siege in those days was generally a prolonged affair, and the skill of the engineer was taxed to form engines for bursting open gates, undermining, scaling, and battering walls, throwing stones, darts, and Greek fire for opposing all these efforts. There were few sieges of great importance in which some new machine was not invented; of these machines, about twenty different kinds are mentioned by Camden, Grose, and other antiquaries. No doubt the methods adopted at that period, both in offensive and defensive warfare, were similar to those used by the Romans and described by Cæsar in his Commentaries.

History repeats itself; for we read that at Conway, as at Metz, the besiegers succeeded in cutting off the water supply of the garrison. The reservoir, 20ft. deep and 15ft. in diameter, at the east end of the inner court, was doubtless intended to meet such a contingency. Formerly a curtain, terminating in a round tower, ran out from either end of the town walls into the river, to impede the approach of an enemy by water. Two entrances, both contrived for security, led into the fortress, one by winding narrow stairs up a steep rock from the Conway, and terminating in a small advanced work before one of the castle gates, covered by two round towers; the other towards the town, protected by similar works, with the addition of a drawbridge over a broad moat. Soon after the erection of this castle the royal founder was besieged in it by the Welsh, and the garrison nearly reduced to an unconditional surrender by famine, but extricated by the arrival of a fleet with reinforcements and provisions. In 1290 Edward the First and his Queen kept Christmas here. When Richard the Second came to Conway in 1399, the castle was kept by fifteen men at arms and six archers. In the Civil Wars it was held by Archbishop Williams for the King, but who, it is said, changed his party, and assisted General Mitton to reduce the place. At the Restoration it was given to the Earl of Conway, who stripped it of its more valuable materials, sending them to Ireland in vessels which are said to have been wrecked and the whole of the property lost. The mortar of the walls is very hard; some of the inner surfaces appear to have been plastered with a very tenacious material. The overhanging of the tower near the railway is a good evidence of the cohesive nature of its ingredients. The walls which enclose the military station protected by the castle are a mile and a quarter in circuit, with four gateways and twenty-one small towers, built, as some have said, a bowshot range apart, the whole being encircled by a ditch or fosse. When we take into consideration the skill shown in adapting the ground-plan of the castle to the peculiarity of its site, combined with its gracefulness of outline, we may conclude that the designer was not only a good engineer, but also an architect of no mean ability.

SANITARY LAW AND SOME DESIRABLE MODIFICATIONS.

IN the Health Department of the Social Science Association a paper was read on Monday by Mr. W. H. Michael, on "Sanitary Law and on the modifications of it that are desirable." After setting forth the evil consequences to a community of bad drainage and want of ventilation—a point which could not be too much talked about—he remarked that nothing could be more foolish in a local authority than to set about the work in a half-and-half manner, for the consequences of such a course would be an inappreciable benefit, and the inevitable rates. He strongly deprecated the present abuse of the district system. The unequal distribution of benefit, coupled with a uniform distribution of taxation over urban, suburban, and rural parts of a district, improperly joined together under one local board, was a source of dissatisfaction to the rural population, who often found the whole benefit of their expenditure accrue to the town. Apportionment of districts sometimes resulted in the other extreme of absurdity, two or even three districts meeting in a town or populous place, each with its own authority, determined to do no work in concert with other authorities; or the formation of special drainage districts for apparently no other object than the creation of a special authority to add to existing difficulties. He gave instances showing how impossible it is for local authorities to carry out improvements, and suggested the following scheme as a remedy:—First, an entire reconstruction and consolidation of existing statutes. Secondly, a careful apportionment of the whole country into health districts; these grouped into Health Unions. Thirdly, the creation in each district of a Health Board, called as now the Local Board, and these grouped together in the Health Union as "The Union Board." Fourthly, the constitution of a central authority—a Ministry of Health—with ample powers to enforce in the last instance compulsory action. Fifthly, such a reconstruction of financial arrangements as shall relieve as much as possible the burden of rates, and more equally distribute it. The new law may with advantage be a reconstruction and simplification of the old, all sanitary measures being under the direction and control of one local authority. At present there are at least two, and it is impossible to say where the functions of one end and the other begin, concurrent authorities to do the same act appealing to different Boards in London for advice and direction, acting independently of each other at great cost of efficiency and power, and often acting only when irreparable mischief has been done. It is contemplated that there should be a fusion of the functions at present fulfilled by the Secretary of State, the Local Government Act Office, the Privy Council, the Board of Trade, and the Registrar-General in one Ministry of Health—a Minister, ranking as a Principal Secretary, with such a staff of engineers and legal and medical advisers as would enable him adequately to supervise the whole health arrangements of the country. And, first, his office should be so constituted as to give advice and assistance, and to exercise a rigorous control, in all the various difficulties arising in execution of sanitary law. It should be a part of the duty of the central authority to help local authorities to guide and direct the whole progress of sanitary work, and be cognisant of its influence and effect over the whole of the country: this to be annually reported to Parliament. For this purpose travelling inspectors, both legal, engineering, and medical, would be required. In order to carry out the system here proposed, the medical adviser of the Minister would be the head of an organisation, branching into every district, and having there its responsible representative in the officer of health—a highly educated and scientific expert, who would be appointed by the Minister, upon recommendation of the local Union (in the same manner as stipendiary magistrates are now recommended by Town Councils, but appointed by the Home Office), the Minister fixing the salary, and the officer being removable only by his order. Upon the officer of health would fall the superintendence of the district; the registration and making of the various returns of births, sickness, and deaths; the hospital arrangements of the district, so far as their sufficiency was concerned; the investigation of causes of disease; recommendations to the local authority, and reports to his chief at the central office. There would no longer be the desultory uncombined work of isolated units—in one district activity, in the next apathy. But an equally important element of success in any new measure of compulsory legislation will be a re-arrangement of the financial position of Local Boards. The two principles to be kept in view are—first, to diminish, as far as practicable, the money payment for works, consistent with true political economy; and, secondly, to prevent burdens falling on any section of the community for expenditure out of which they are to derive no benefit. In order to accomplish the first of these purposes, the principle of repayment in 30 years of principal and interest should be largely modified, the repayment being extended over a larger number of years. While one district rate for all purposes is proposed to be retained as at present, there must be some inequalities in the incidence of taxation. These, however, would be reduced to a *minimum* by the plan of readjustment of districts here suggested. And the continuance or extension of the one-fourth system—

where, from the nature of things, the benefit to be derived from sanitary appliances must be limited—would go far to make an equitable adjustment of remaining difficulties.

Sir Charles Adderley, M.P., and chairman of the Commission appointed to inquire into the best means of amending sanitary laws, opened the discussion. He presumed at the outset that they were all agreed on one point, that amendment of the sanitary laws was necessary, and few would dissent from the proposition that all sanitary Acts should be erased from the Statute Book, and a complete Act placed there in their stead. He believed they were also agreed on one other point, the very basis of our liberty—that the principle of local administration should be maintained, though subject to a central Minister of State in London. The ratepayers, however, must have absolute control in laying out the money. The duty of the central authority, on the other hand, would be to see that the local authority did not go to sleep, because that would be a great mischief to the country at large. This being agreed on, four points must be kept in view,—firstly, simplicity of machinery; secondly, consideration of existing enactments, so that a person might take the one statute clause that formed the whole law; in the third place, to make the law universal in its application; and, in the fourth, to get machinery for settling the law effectually in application. Generally, he endorsed Mr. Michael's views in regard to those four points; they were agreed that the local authority should have the control of the district it represented, and that the central authority should have the means of insisting upon the action of the local authority in case of neglect, and of doing the work itself in case of stubborn inaction, with power to charge the local authority with the cost. In case of boroughs, the Council should be the authority; for all other populous communities the Local Boards, elected according to the present law, could act with like powers. There would be places still under improvement commissions and local Acts; but the authority of each case would have full powers, and in each case would be encouraged to merge in the general national system for the simplification of machinery. It was because he desired this simplicity of machinery that he regretted seeing towns going to endless expense to procure local Acts. In a town such as Newcastle, difficulty arose as to the jurisdiction of the magistrate. The ships on the Tyne came under the authority of the adjacent place where they happen to be moored, and passed within three or four different jurisdictions before arriving at Newcastle. This was a difficulty for the removal of which he would be glad to hear suggestions with a view of bringing the town and harbour under one jurisdiction. The most difficult subject to deal with was the country, for which a sufficient body was required to deal with a good rural area. Mr. Michael's plan slightly differed from what he conceived to be the best, but the difference was confined to points of detail, which would probably prove to be no difference upon examination. In the first place, he conceived it would be better to use the areas and jurisdictions we have at present rather than create new ones, for a reason insisted upon by Mr. Michael, that the creation of a new area involved the creation of a new and expensive administrative body. He would have the unit of local government, the Union, with its Board of Guardians, to be combined for larger measures, such as the conservancy of rivers. At present there were petty sessional districts, highway districts, and Unions, each having a different area, and so constituted that in no instance did they coincide, and in many instances they overlapped, thus inflicting a double set of rates. Insisting upon Mr. Michael's proposition that the first thing to be done was to repeal all existing laws, he remarked that at present there were 13 Acts since 1848 which had to be consolidated, besides several subsidiary Acts, all of which should be consolidated, and all such illogical distinctions as those between the Nuisances' Removal Acts and Board of Health Acts should be removed. On the subject of byelaws, he expressed the opinion that they should be as few as possible. He did not like even the bye-legislation of the Council on Education. It was much better that matters should come before the Legislature itself and receive its sanction in the ordinary way. He, however, wished it to be understood that he expressed only his individual opinions, and could not say what the Commission over which he presided would ultimately report with a view to legislation next Session.

Several other speakers took part in the debate, among whom Dr. Farr gave a general adhesion to the doctrines set forth in Mr. Michael's paper, but said he should take exception to one or two points. He was rejoiced to hear from Sir Charles Adderley that it was probably the intention of the Commission to recommend the consolidation of sanitary law: he earnestly hoped the new law would be simple, and not follow the bad example of the existing law, which went too much into detail. No Act could be expected to meet every individual case; much must be left to the department charged with its administration. Having commented upon the want of uniformity in the various divisions of the country, which he said was so defective that it was impossible to say what "Manchester" meant, he recommended the acceptance of the municipal boundaries for the towns, and would take the Unions as the basis of dividing the country. But in all cases the boundaries needed revision, and he hoped a Commission would be appointed to do this with as little disturbance of existing things as possible. The lesser districts might be grouped together for more general works.

SCHOOLS OF ART.

Dorchester School of Art.—The annual distribution of prizes in connection with the Dorchester School of Art took place on Tuesday week, Mr. J. Floyer, M.P., presiding. From the annual report read by the hon. sec., it appears that during the year 1869 the school was attended by 88 students, of whom 74 remained on the books at Christmas. At the Government examination on March 10 and 11 last, 17 students presented themselves for examination in freehand, of whom 8 passed; 8 in geometry, 5 passed; 17 in model drawing, 10 passed; 6 in perspective, 2 passed. In freehand 3 passed "excellently," gaining prizes; in geometry 3, and in model drawing 5. Eleven prizes were consequently awarded. In April, 253 works, by 52 students, were sent up to South Kensington for examination. Of these three—Miss Emson, Miss Maskew, and Mr. E. R. Pearce—were deemed worthy of being admitted to the national competition; and five third grade prizes were awarded. Payments were made on account of work executed by seven artists and students. The report, which was unanimously adopted, concluded by expressing the thanks of the committee to Mr. Campbell, the master, for the efficient and able manner in which he performed the duties of his office.

Rochdale School of Science and Art.—On Wednesday week the fourth annual meeting in connection with the Rochdale Science and Art classes was held in the Public Hall, Rochdale. The secretary read the report, in which it was stated that the total number of pupils under instruction during the last winter session was 191, ranging from 13 to 45 years of age. The total number of pupils who presented themselves for examination in the four drawing subjects was 60; in applied mechanics, 16; chemistry and electricity, 21; animal physiology and botany, 23, and in mathematics, 5. The report also states that the Rochdale classes compared very favourably, upon the whole, so far as the success of the pupils at the examinations was concerned, with those of any other town. For, while the percentage of those who passed in the drawing classes was considerably above the general average for the United Kingdom, the number of pupils who passed in the other classes was very largely above the average.

ARCHÆOLOGICAL.

Worcester Cathedral.—In the necessary excavations now being made in the Lady Chapel, in Worcester Cathedral, for the purpose of laying down a new pavement, it became necessary to remove three slabs lying on the floor at the extreme east end. Beneath one of these slabs was discovered a stone coffin containing the skeleton of a man partly enveloped in the fragments of a dress in which he had been buried. When the Archæological Association visited Worcester some years ago the effigy on this slab was assigned by Mr. Bloxam to Bishop William de Blois, who died 1236, and who laid the foundation of this part of the cathedral. The Rev. C. Boutell, who, with the Dean and the members of the Chapter, examined the remains on disinterment, expresses his conviction that the body was interred as represented on the coffin lid, in eucharistic vestments, of which the remains are recognisable. The following figures worked in gold and silver thread on a very rich silk have been recognised:—1, PAVLV (the S wanting). The figure has in its hands a book and a drawn sword held erect. 2, IHOAN; 3, ANDRE; 4, IACOBVS; 5, BARTOLOMEVS; 6, DANIEL. Two pieces of rich gold fringe correspond in width with the compartments occupied by these figures. There are two other figures under canopies and on pieces of silk expanding in width to 4¼in. at the base. These are ADELBERTVS, crowned, with a sceptre, and NICOLAVS, with mitre and pastoral staff, his right hand in benediction. There is also a perfect *Agnus Dei*, worked with gold thread in a circle 1¾in. in diameter. The other fragments contain portions of a beautiful border—probably the border of the chasuble—of a design resembling escallop shells. The coffin had evidently been previously opened, when, besides disturbing the remains, the episcopal ring, staff, the valuable parts of the mitre, chalice, and paten, unquestionably buried with the bishop's remains, were removed.

Building Intelligence.

CHURCHES AND CHAPELS.

Christ Church, Douglas, near Ormskirk.—On Monday afternoon last, a handsome silver trowel was presented to Miss Morris, of Fairhurst Hall, near Ormskirk, on the occasion of her laying the foundation stone of this church. The ceremony was performed in the presence of a large concourse of people. The service was conducted by the vicar, the Rev. W. Price. The cost of the church will be over £5,000, and will be built at the expense of Miss Morris, as a memorial to her mother. The Manchester Diocesan Society contributes £150. The site for the church and school is the gift of Sir Thomas George Fermor Hesketh, Bart., M.P., Rufford Hall. The plan of the church consists of a nave 57ft. by 28ft., and 42ft. high; north aisle, separated from the nave by four pointed arches; chancel, 29ft. by 20ft.; organ-chamber and vestry on the north side of chancel, and the tower and spire, the lower portion of which is intended as a children's gallery, is on the south side. Accommodation is provided for 409 adults; the whole of the benches and stalls will be of pitch pine. The inside will be lined with ashlar work, and the exterior will be built of Parbold stone in courses and quarry face, and the dressings of Longridge stone. The tower and spire form a prominent feature on the plan, and will be about 115ft. high. The architects are Messrs. Myres, Veevers, & Myres, of Preston; Mr. J. Pownall, of Preston, clerk of works; and Mr. John Preston, of Wigan, builder.

Everton.—On Monday the foundation stone of a new church, to be dedicated to S. Ambrose, was laid in Prince Edwin-street, Everton. The cost of the building will be about £5,500, and it will accommodate 700 worshippers. The architect is Mr. G. E. Grayson, of Liverpool; and the builders Messrs. Burroughs & Sons, of Leycester-street, Liverpool. The style of architecture will be the Early Decorated Gothic, and the material used ornamented brick, both external and internally.

London.—A new Jewish Synagogue (an illustration of which will shortly appear in the Building News) has been consecrated. It is situated in Upper Berkeley-street, Portman-square. The entrance to this edifice is beneath a handsome stone arch, supported by several substantial pillars of the same material. Within is a spacious hall or atrium, but the building itself is a domical structure, Byzantine in character, and a square on a plan, measuring 70ft. each way, with a wide gallery along the sides and western end, the ceiling consisting of a large central dome and four small domes at the angles, four great arches covering the side spaces. This ceiling is carried by four piers of clustered columns of Devonshire marble with carved capitals. At the east end of the building is a semi-circular recess or apse, in which is placed the organ and choir; and in the centre of this apse is the ark or shrine, the receptacle for the scrolls of the law, constructed entirely of inlaid marble. One unusual feature in the arrangements is the placing of the choir at the east end of the building facing the congregation, and concealing them from view by a screen of marble, containing openwork grilles of gilded metal. The decorations are entirely varied combinations of simple geometrical forms, picked out with colour. In the carving and sculpture the lily, pomegranate, olive, fig, and palm occupy prominent places. Accommodation is provided for 1,000 worshippers, and the whole edifice will bear a favourable comparison in size and magnificence with the great synagogue in Great Portland-street, which was consecrated about three months ago. The builders, Messrs. George Myers & Sons, of Lambeth, have followed very effectively the designs of the architects, Messrs. Davis & Emanuel. The total cost is estimated at about £20,000.

Tansley.—Tansley Church, Derbyshire, has just been re-opened after restoration and enlargement from plans by Messrs. Stevens & Robinson, architects, of Derby. The total cost has been about £500. Mr. Buxton was the contractor.

BUILDINGS.

Doncaster.—On Thursday week the foundation stone of a new Corn Exchange and Market-house was laid at Doncaster by the Mayor. The external elevation of the Corn Exchange is in the Classic style, to accord with the present buildings, and is treated on Classical principles, the Tuscan order being employed for the ground story, surmounted by that of the Doric, the columns and pilasters being properly spaced. The building is 91ft. 6in. by 84ft. inside measurement, and although chiefly intended for a corn exchange, is also designed with the view to large public assemblies. The interior is divided into what may be called nave and aisles, the centre portion or nave being 58ft. wide, spanned by six semi-circular wrought-iron lattice ribs, without cross ties of any description, so that there will be a clear and uninterrupted space from the floor to the apex of the roof inside of about 63ft. Galleries are provided on three sides of the exchange—viz., over the settling offices and principal entrance, and over what have been called the aisles, for the purpose of giving increased accommodation to meet the exigencies of large public assemblies. Mr. William Watkins, of Lincoln, is the architect, and Mr. J. Athron, of Doncaster, the builder.

Manchester.—On Monday the foundation stone of the new building for Owens College, Manchester, was laid on the site which has been purchased in Oxford-street, by the Duke of Devonshire. The building has been designed by Mr. Waterhouse, the architect of the Manchester Assize Courts and of the new Town-hall. The style of the building is Gothic. It will have accommodation for 600 day students, and for a much larger number of evening students. A sum of £102,000 has been placed at the disposal of the building committee, £67,000, of which is at present available for the erection of the college. The cost of the building is £90,000, so that a sum of from £25,000 to £30,000 is still required for building purposes. When completed the building will form a quadrangle, of which that part of the college which is now in course of erection will form the western side.

Manchester Free Grammar School.—The numerous applications for admission to the Manchester Free Grammar School having rendered it necessary to provide more accommodation for scholars, the trustees have at considerable cost erected a new building in Long Millgate, which unites the two old school-buildings, gaining thereby a better arrangement for the class rooms and general supervision than has heretofore existed, as well as accommodation for about 500 additional scholars. The new building was occupied for the first time at the commencement of the present session. It is five stories high, including the basement, covers an area of 700 square yards of land, and has a frontage of 40 yards to Long Millgate. The architectural character of the building is Gothic, adapted to modern requirements; all the windows and other openings have moulded and splayed reveals, with stone dressings; and the walls are faced with the best stock bricks. The main body of the building, containing the large hall and class-rooms over, is 64ft. in height, and is crowned by a battlemented parapet and octagonal pinnacle at the corner. The portion of the building containing the entrance hall and staircase projects beyond the main building, and is carried to a height of 77ft. forming a tower flanked by an octagonal flagstaff turret 88ft. high. A circular staircase in this turret leads to the oof. In this part of the front is the entrance oorway 7ft. 6in. wide, with deeply-recessed jambs, detached shafts with carved capitals, and richly moulded arched head. Over the door is a stone oriel window of two stories. The work has been carried out by Messrs. Swindells & Little, contractors, under the superintendence of Messrs. Barker & Ellis, architects.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

To Our Readers.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

Letters relating to advertisements and the ordinary business of the Paper should be addressed to the EDITOR, 31, TAVISTOCK STREET, COVENT GARDEN, W.C.

Advertisements for the current week must reach the office not later than 5 p.m on Thursday.

Received.—E. & P., E. H., P. B. H., W. S. R., T. D., C. B. A., J. H. T., Homeward Bound, J. H., J. W. T., Rev. E. K., F. W. S., J. A. E., C. P., C. H. Hallett. Rev. P. W. M., S. Schoolfield, Jas. Hogarth, A. G. B., J. A. M.

John James.—See our answer to "M. C." last week.

W. D.—Yes, we are glad to hear from an old friend.

J. W. W.—Send very soon or you will be too late.

J. G. Dunn.—Sketch not good enough. We have received several of a similar quality lately.

Thos. Goodsam.—We don't know the origin of the "Green Man" Inn, and don't want to know. In answer to second query let "T. G." read series of articles on "Decoration," by an "Experienced Workman" which have recently appeared in this publication.

W. Wilson.—Very probably.

J. R. Walker.—Can't promise. Other drawings not wanted. We shall give about ten more of the sketch-book series.

W. S. Lee.—No stamps enclosed.

S. Oswald.—Received view and description of Hospital. The drawing is not good enough for reproduction by the photo-litho. process.

Correspondence.

THE ISLE OF THANET.

(*To the Editor of the* Building News.)

Sir,—I cannot allow to pass unrebuked the offensive manner in which your correspondent, lately sojourning in the Isle of Thanet, has thought fit to make use of the name of a former fellow-townsman of mine. Mr. Smith received in his youth a regular professional education; he has made a special study of the archæology of architecture, and has had considerable practice during a course of, I suppose, from twenty to thirty years. It is true that he was also a builder, but I don't see why an architect may not carry out his own designs, or even those of others, just as a surgeon may dispense his prescriptions or a lawyer make a fair copy of his deeds. The slur intended to be cast in the words "'prentice hand" does not apply in this case. I know that Mr. Smith, in dealing with an ancient building has always well studied its style or various styles, and before making a design has carefully searched for every existing fragment of masonry which would indicate what had been, and has strictly followed these indications: the more perfect the doorway, window, or what not, the more exact has been the restoration. The result, perhaps, has not always been so harmonious as in instances where the architect has let nothing of antiquity dictate his designs; but the acquisition of truth in the restoration is, to my mind, the very highest gain. The pleasing uniformity of another church in the island than those to which I am referring seems to have pleased your correspondent, but here the old stone windows were utterly demolished, and new ones of a totally different style and shape were substituted! Mr. Smith is responsible for the whole of the work at Minster, except for the flying buttresses and substantial repair of the chancel, which were designed by Mr. Ewan Christian; and Mr. Ashpitel had nothing at all to do with the matter—he did not control the designs in any wise; I believe he saw them (on behalf of the vicar) and approved of them. I well remember that there had been some doubt as to the legitimacy of certain parts of the designs; and when the Kent Archæological Society visited Minster in August, 1864, Mr. Matthew Bloxam, who is an authority, was appealed to, and he having made a very minute inspection, said that the restoration was the most faithful that he had ever seen; and it reflected great credit upon the architect for the care which he had bestowed upon the work. At S. Lawrence the same care was bestowed; and in a great many instances (notably in the windows, of which several remained, though much decayed) the new work was merely a reproduction of the old. Some years ago, a charge was brought against Mr. Smith of having wantonly removed some very interesting symbolic carving from the capital of one of the columns of the crux; but it was proved that these interesting relics were nothing more than rude plaster casts which had, within the memory of many then living, been stuck up by a plasterer of the neighbourhood. The east window of the chancel proper was the gift of the Dean and Chapter of Canterbury, and was designed by their architect, Mr. Austin. The new roof of the chancel and other substantial repairs, together with the seats of that part, were the work of the Ecclesiastical Commissioners, under the direction of Mr. Christian. Had your correspondent confined himself to a criticism of the designs, I might not have troubled you with this letter, for *de gustibus non disputandum*, but since he has descended to personalities, I could not refrain from taking up my pen in defence. I must also correct some errors as to the authorship of the buildings on the West Cliff at Ramsgate, which are noticed in your paper. Both the monastery and college, as well as the gate, pillars, and lions, were not designed by the late A. Welby Pugin, but by his son, and, therefore, the credit should be given to him; the more so as a contrast is drawn between them and his more recent works on the East Cliff.—I am, &c., O. K. T.

London, Sept. 27th, 1870.

BUILDING SOCIETIES.

Sir,—At the present time, when labour is scarce and provisions are dear, it may not be supposed amiss to draw public attention to what I consider an unpalatable fact. I see you from time to time record the proceedings of building societies, as indeed you well may, as yours is a building newspaper. No doubt building societies may have done good by inducing many a man to invest his savings in a house which would not otherwise have been built. It is, however, a notorious fact that these societies have bought up a great deal of property about London, which is now, and is likely to remain for years to come, unproductive. Take, for instance, Wimbledon. At the present time there are in and about Wimbledon many scores of acres of good productive land parcelled out into building plots, and have been for years. I have no hesitation in saying that land enough has been taken away from ordinary farming purposes to be appropriated perhaps at some time or other for building to accommodate thirty thousand persons. At the present time these "estates," as they are called, have not houses built on them, and are not likely to for the next ten, fifteen or twenty years; neither are they in any way cultivated. In fact, they are absolutely unproductive, and I maintain that the Conservative Land Society, the British Land Society, Mr. Garth, and others, have, by purchasing these "estates" in the hope of making enormous profits at some time or another, done dis-service to the community. They have been the means of diminishing for the time, and in all probability for many a long year, the productive soil of the country, and correspondingly decreased the demand for farm labour. Some one may say that every one has a right to do what he likes with his own. I don't believe it, and particularly as pauperism is on the increase in London. These scores of acres in and about Wimbledon are now barren, and some of them are likely to remain so for the latter part of this century, when, had it not been for these societies, and capitalists imitating their example, the land would be producing grain, fruit, or vegetables, as it did a few years since. No doubt as it is in Wimbledon so it is in other suburbs of London. I know it is so in and about Barnet. I am not attempting to point out a remedy. I merely lay my finger on a blot and hope that action of some sort may be taken to remove it.—I am, &c., Suburban.

UNITED STATES PATENT LAW REFORM.

Sir,—It will, no doubt, interest your readers to know that by an Act of Congress, passed on the 8th July last, some important modifications were made in the law relating to patents for inventions. By this Act also foreigners are allowed to take out patents for designs, which will no doubt prove a great boon to the commercial community in this country. There is also a provision made for the registration of trade marks. It would take up too much of your space to quote in full all the new parts of the law affecting Englishmen. We, therefore, simply add the main features.

1. The law which required foreigners to put, and continue their inventions on sale in America, within eighteen months after obtaining their patents, has been repealed.

2. The law permits a foreigner to patent his invention in the States, after it has been introduced and patented abroad for years, provided it has not been used in America for more than two years prior to the application for a patent.

3. Models are not now required when the invention can be illustrated by drawings, in such a manner as to be understood by the examiners.

4. The drawings of patents being now all photographed, may be had at a very small cost.

5. Under the new law foreigners may take out patents for designs. The term varies from three years and six months to fourteen years, at the discretion of the applicant. The fees being, of course, proportionately increased according to the number of years applied for.

6. Foreign industries may now be protected by the registration of trade marks, and reproduction in America without the consent of the inventor prevented.—We are, &c.

Hughes and Son.

COVENT-GARDEN MARKET.

Sir,—I am glad that your attention has been drawn to the state of the accommodation at Covent-Garden Market, and the nuisance caused by the vans and waggons bringing the collection of dung and offal back into the market.

I would ask you to call the serious attention of the public by means of your valuable publication to the following facts.

Nearly all the carts, vans, and waggons bringing vegetables and fruit to our London market, after unloading, do as you state, go away and collect manure from any source, and of course much of it must be of the most nauseous and vile description, some being from cow-sheds, some from pigs, and other putrid matter from various dung heaps. No one could credit the horrible filth that is concealed under the seeming decent covering of litter in many of these loads this can only be seen when the loads are taken off in the dung-yard.

On these teeming loads of filth the very baskets and crates that bring the goods to the market are placed for many hours, and must of course be soddened and impregnated with poisonous vapours, and it often occurs that portions of the filth get inside the baskets. By having the baskets collected by other means, say by light carts or vans, similar to the way the millers collect their empty sacks, we should effect two great improvements; namely, the various fruits and vegetables would come into the market untainted with nauseous vapours, and we Londoners spared the nuisance of the dung being brought back to the market, for then the loads would go direct from the collecting places to the dung-yards.—Yours, &c,

Improvement.

THE PRESENT OVER-CROWDED STATE OF THE PROFESSION AND ITS CONSEQUENCES.

Sir,—The above heading will no doubt touch the chord of sympathy from experience in many draughtsmen. The evils arising from excess of labour of any kind in the market has been written upon, seemingly not to much purpose, by some of our greatest political economists; if it had surely we should have received the benefits before this. The fault seems to be a want of carrying out ideas practically, more than want of knowledge of them. In nature we observe all magnificently arranged, forming a grand whole; she balances the different species of the creation by fixed and unchangeable laws, so that no creature crushes out of existence any other variety of living beings.* She deals with a tolerant hand upon everything, and not like man, from his peculiarly constituted social laws, hardly giving his fellow room to live. Can no organization be formed for the benefit of the architectural profession, to ameliorate the present poverty-stricken condition of draughtsmen? From the advertisements that appear in the Building News and other papers, there can be no doubt that there are far too many draughtsmen in the profession, and that consequently serious hardships have often to be endured, particularly by young men, who are entirely dependent upon their own exertions for their maintenance. When we see advertisements for appointments standing for months unsuccessful, it is surely time that some general understanding should be come to amongst draughtsmen. Many architects keep three or four pupils who have not work for one, and who never bestow an hour on their training, but allow them to remain in the office unencouraged and unaided, and whose only end seems to be their own benefit; the consequence being, at the end of the pupils' time, they can be said to be no more than superficial draughtsmen, only really capable of copying and tracing.

The case being that many young men discover that they have served their articles generally for no benefit to themselves, and have to leave the profession as a necessity for some independent means of obtaining a livelihood. I am quite aware that there are architects who are thoroughly conscientious in training their pupils, but these are more the exception than the rule. Undoubtedly, the more premiated pupils architects can get, the better for themselves, whether it is to the benefit of their pupils and the profession or not, taking into account their having to earn a living, after giving away their time and money. It is rather hard that a young man should receive a liberal education, pay a premium, and serve four or five years, and at the end of that time not be able to earn more than an ordinary mechanic or labourer.—I am, &c.,

J. L. M.

COMPETITIONS.

Sir,—The enclosed is a copy of letter just received in answer to my application for "particulars" of a competition for church and schools. I think it needs no comment.

W. T. H.

[Copy.]

"Dear Sir,—The committee have sent conditions of competition to nearly 250 architects, and their stock is now exhausted (!) I do not think it worth while to get any more printed, and therefore cannot comply with your request of the 26th inst.—Yours truly.

Sept. 27, 1870."

◆

Intercommunication.

◆

QUESTIONS.

[1971] CONEY'S WORK ON "CONTINENTAL ARCHITECTURE."—Can any one inform me where I can get a copy of this work, and the price?—H. J.

[1972] COLOURING SIZE.—How can I colour size a pale blue? I find on putting indigo into it the size becomes a pale green.—V. C.

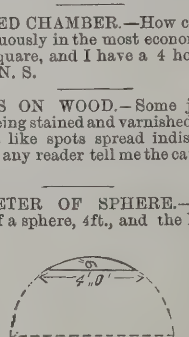
[1973] POLISHING PLASTER OF PARIS.—Will any reader tell me if it is possible to polish plaster of Paris, and if so, how?—G. W. A.

[1974] HOUSES FROM STRAW AND WATER-GLASS.—Is it true that some houses have recently been built in this country the principal materials of which was straw in bundles impregnated with water-glass or silicate of soda? Any particulars would oblige.—Puzzled.

[1975] HEATED CHAMBER.—How can I heat a room up to 180° continuously in the most economical way? The room is 8 yards square, and I have a 4 horse-power boiler and engine.—A. N. S.

[1976] STAINS ON WOOD.—Some joinery I am at work on has, on being stained and varnished, become covered with black stains like spots spread indiscriminately over the surface. Can any reader tell me the cause and remedy?—Whisper.

[1977] DIAMETER OF SPHERE.—Given the base of the segment of a sphere, 4ft., and the height, 9in.; can any of your readers give me a rule for finding the diameter of the sphere completed?—Delta.



[1978] PRICE IN CUBING UP.—Would any of you readers kindly inform me, in a case of cubing up the con tents for approximate estimate of a block of warehouses similar to the new warehouses at S. Katherine's Docks, London, what is the price per cubic foot usually calculated for such work in London.—Liverpool.

[1979] LIME KILN.—Will some reader favour me with a description of a good form of kiln for lime burning, and state the proper proportion of coal used to lime burnt; also the quantity burnt per day? A sketch would be useful.—Chalk.

[1980] WALL PAPER.—What is the best material to put on damp walls to keep the paper from being tarnished?—J. T. T.

[1981] RED BRONZING.—Can any one tell me how the red bronzing on chandeliers, brackets, &c., is done? I understand the green bronzing and lacquering, but not the red.—R. J. G.

[1982] METERS.—Can any gas engineer explain this? When we are cleaning our purifiers our meter travels backwards. It has lost 1,000ft. though we have shut the centre valve.—Puzzled.

[1983] WATERWORKS.—What is the cost in laying mains in roads and streets per mile? In supplying by gravitation, what head is required to overcome the pressure in the pipes?—H. Underhill.

[1984] LIME KILNS.—What is now considered the best and latest form of lime kiln and the number, of bushels of lime to be produced from 1 ton of culm from such kiln?—Subscriber.

[1985] MALTING KILN.—Could you or any of your readers give me any information as to the most approved *modern* method of building a malting kiln; also where could the best model of such a building be seen? Could not the old-fashioned ugly *cowl* surmounting the drying kiln be done away with, and something more sightly substituted? A few hints in your next paper would greatly oblige.—An Original Subsbriber.

REPLIES.

[1947] STRENGTH OF CANTILEVERS.—The cantilever described by a "Young Builder" is not strong enough for the following reasons:—It projects 18ft., and is 1·5ft. in depth, the distance apart being 6ft. A platform like this for foot passengers should safely carry at least 1cwt. pe square foot. Then 18 × 6 = 108 square feet, and a distributed load of 108 cwt., or 5·4 tons. The sectional area o the top flange is 4·5 square inches. Wrought-iron shoul not be strained to a greater degree than 5 tons per squar inch. Therefore in this case there should not be a greate strain on the top or bottom flange than 22·5 tons. Bu here we have a strain which, if we call it S, is equal t $\frac{\frac{1}{2} W \times L}{D}$, or $\frac{W L}{2 D}$, which amounts to $\frac{5{\cdot}4 \times 18}{2 \times 1{\cdot}5} = 32{\cdot}4$ tons and therefore the iron is unduly strained. The radical de fect of the structure is apparent at first sight, for the dept is only half the usual proportion to the length. It is usua to make the depth about a twelfth part of the length i the beam be supported at both ends, or a sixth part i fixed at one end only, whereas here we have a projecting beam of a depth only a twelfth part of its length; an that is the defect which causes an undue strain on th iron. To reduce the strain to 5 tons per square inch th depth should be 2·16ft., for it is equal to $\frac{W L}{2 S} = \frac{5{\cdot}4 \times 1}{2 \times 22}$ = 2·16 But it would be much better to increase th depth of the beams to 3ft. and proportionately increas their distance apart, thus, 2·16 : 3 : : 6 : 8·33, or say 8ft The structure would thus be stiffer, and would probabl cost less.—C. S.

[1949] AREAS OF CIRCLES.—The circumference c a circle is 3·1416 times the diameter. Half the diamete of a circle multiplied by half the circumference equals th area of the circle. When diameter = 1 circumf. = 3·1416 and $\frac{1}{2} \times \frac{3{\cdot}1416}{2} = {\cdot}7854$ = area of circle; so that when dia meter = 1, circumference = 3·1416, and area = ·7854. Bu the areas of circles are to one another as the squares c their diameters, therefore area of circle = dia. × ·7854.—A. Scargill.

[1950] CAST-IRON TANKS.—The proper mate rial to use for stopping the joints of water tanks "iron cement," which can be obtained at any ironwork Its principal ingredient is iron borings, and it is suitab for luting or making tight every kind of iron joint.—St. Ives.

[1951] BASE LINES.—Five miles is not a very lon base line, and it is scarcely necessary to make any allow ance for the expansion and contraction of the chain. How ever, if "Assistant" wishes to do so, he may observe the tem perature at the commencement and termination of eac day's work, and calculate the amount by the ordinary formu for the purpose. If L be the length of the chain at star ing, and T the temperature, L^1 the length required to known, and T^1 the temperature, then $L^1 = \frac{L(I + T^1)}{(I + T)}$.

S. P.

[1952] HARBOURS AND DOCKS.—The only goo work on these subjects is that of Sir John Rennie, but it both rare and expensive. It contains numerous plat and full descriptions of the great national harbours a docks designed by that great engineer. Its publishi price was eighteen guineas, but a copy may now be h for much less, when it is to be had at all. Try at Spon Charing Cross.—Lock.

[1953] FIREPROOF FLOORS.—In reply to "L. L. M the Dennett arch is one formed of concrete, but instead the basis being ordinary lime it is of the sulphate of lin It is certainly one of the best and cheapest means construction available to the architect as but little dep is needed for the rise and thickness of the arch. Apart from its fireproof and other qualities the Dennett material is remarkable for its strength, 7cwt. per super. foot being placed on work immediately after construction without a particle giving way.—S. S.

---

* Our correspondent is certainly no believer in the Darwinian theory, or he would not write so emphatically on his point.—Ed. B.N.

[1960] TAKING OUT COLOURED LINES.—A strong solution of chloride of lime will take out almost all colours derived from animal and vegetable matter, but will not touch mineral. Keep it in a bottle ready for use, and lay it on with an old camel-hair pencil.—H. & Co.

[1960] TAKING OUT COLOURED LINES. — If the lines are in either carmine or lake, "Desperation" will find that a solution of chloride of lime will take them out.—L. O. V.

[1960] TAKING OUT COLOURED LINES. — Your correspondent "Desperation" will find that a little liquid chloride of lime, which can be purchased at any chemist's, applied to the red lines by means of a hair-pencil—or if the lines be near to black ones, which may be affected by the damp, by a drawing pen,—he will find the troublesome lines disappear instantly. A little clean water should then be used in a similar manner to remove any deposit that may be left by the chloride of lime, and blotted with a piece of clean paper. If done with care, no trace of the lines will be left.—A. J. C.

[1960] TAKING OUT COLOURED LINES ON PLANS.—If "Desperation" will go to his chemist and ask him for a small quantity of chloride of lime (saturated solution) he will then have the means of removing the obnoxious lines he speaks of. Dip an old but clean camel's-hair pencil in the solution and go over the lines, which will quickly vanish. The superfluous moisture can be removed with blotting paper, and no injury will be sustained by the plans. In any case where the cloride leaves a slight yellow stain, from not being removed quickly enough, a sponge and a little clean water will remove this appearance. Brickwork may be beautifully and accurately represented by first colouring the whole space with lake or carmine, and then drawing the mortar joints with a drawing pen charged with the chloride.—J. B.

[1962] CALCULATION OF LOGARITHMS. — If the logarithm of 2 be given the log of 4 is also given, being double the same, and the log of 16 is 4 times the log of 2, and the log of 64 is 6 times the log of 2. Thus, if log of 2 $= a$, log of $4 = 2a$, log of $16 = 4a$, and log of $64 = 6a$. Since the addition of log is = to the multiplication of quantities.—W. T. M., Belfast.

[1962] CALCULATION OF LOGARITHMS. — In answer to "Candidate's" inquiry, how to find the logarithm of 64 from the logarithms of 2 and 4, the simplest way I know is the following. The number 64 is the square of the product of 2 and 4. If then we add together the logarithms of 2 and 4 we have the logarithm of their product or 8, which multiplied by 2 will give the logarithm of the square of 8 or 64.—A. J. C.

[1962] CALCULATION OF LOGARITHMS.—To the logarithm of 2 add the logarithm of 4, and this logarithm added to itself will be the logarithm of 64, thus,

$$\begin{array}{r}
0{\cdot}30102999566 = 2 \\
0{\cdot}60205999132 = 4 \\
\hline
0{\cdot}90308998698 = 8 \\
0{\cdot}90308998698 = \\
\hline
1{\cdot}80617997396 = 64
\end{array}$$

Because in multiplication add the logarithm of the multiplier and multiplicand together, the sum is the logarithm of 8 and 8 multiplied by itself is 64, and we must proceed the same as before.—Non-Candidate.

[1962] CALCULATION OF LOGARITHMS. — Logarithms are used instead of natural numbers as a ready and easy method of calculation. Multiplication by natural numbers is simply addition by logarithms, division, subtraction; and the intricate process of involution and evolution, or the raising of powers and extraction of roots, is reduced to simple multiplication and division. Given the logarithm of 2 and the logarithm of 4, to find the logarithm of 64.

By natural numbers : $2 + 4 = 8$ and $8 + 8 = 64$.

By logs. : log. 2 + 4 log. = log. 8 and log. 8 + log. 8 = 64

Example.

$$\begin{array}{r}
\log 2 = {\cdot}30103 \\
\log 4 = {\cdot}60206 \\
\hline
2 + 4 = 8 \text{ and } \log. 8 = {\cdot}90309 \\
\log. 8 = {\cdot}90309 \\
\hline
8 + 8 = 64 \text{ and } \log 64 = 1{\cdot}80618 \text{ answer.}
\end{array}$$

—A. Scargill.

[1969] BRAZING BAND SAWS.—"Wood" must bring the two ends of the saw close together and fasten them, then take a small pan of charcoal and place it under the ends, and then direct the flame of a blowpipe upon them, The ends will soon become red hot, when sprinkle some borax (powdered) upon them, and then add your solder with a piece of iron. The way to make the solder is to melt three parts of brass filings and one part of silver in a crucible, and this, when poured out must be filed away and the filings put into a solution of sal ammoniac in water. When wanted for use this must be taken out with a piece of iron rod and laid on the ends of the saw until melted. When the ends are firmly united and quite cool you may file off the superfluous solder.—F. W. B.

[1970] SOFTENING ASH TIMBER.—Steam is the usual agent, but where practicable boiling in water is the very best means. The great thing is to have the right quality of ash: some kinds will bend, some won't. One locality will yield prime ash, another close by, with equally good soil, will yield inferior. The timber should be heavy, tough, and cut from a good butt; no matter if three years cut and seasoned. A splinter from this quality of ash will peel or pull of toughly, and run a long way down the plank before it gives way. Half-an-hour's boiling will soften 2in. square. Then have everything ready. Out with your stuff, from the boiler to the mould, and screw or wedge it up without stopping, and leave it to cool for a few hours. If "C. J. C." fails again he may blame his timber.—Kappa.

LEGAL INTELLIGENCE.

S. Mary's Chancel Gates, Taunton.—The question of the erection of the gates between the chancel and the nave of the church of S. Mary Magdelene, Taunton, will again come before the Consistorial Court at Wells, on the 4th October. It is expected, however, that the proceedings will be only formal, the churchwardens' opponents to the application for the erection of gates merely putting in affidavits in support of their allegations, and leave being given to the applicants to file counter affidavits.

WATER SUPPLY AND SANITARY MATTERS.

Bromsgrove.—The contract for carrying out the complete sewerage of Bromsgrove, according to the plans of Mr. Purchas, C. E., has been signed by Mr. John Clifford, of West Malvern, the contractor.

The Drainage of Lincoln.—While the Local Board of this city were vainly endeavouring to evade the pertinent inquiries of the Home Secretary relative to the pollution of the river Witham by sewage, strong evidence of its insalubrity was being supplied by the records of one of the city medical institutions. At the last monthly meeting of the Lincoln Dispensary Committee, the house surgeon reported the recent occurrence of several cases of enteric and scarlet fever, "all on the waterside, and of a malignant character." These cases, he says, have been "probably occasioned by the putrid emanations from the river." Vague assertions about the general healthfulness of the city are, as the *Lancet* observes, worthless in comparison with the simple logic of the house surgeon's facts, as the local board, will, we hope, be made to comprehend. Excremental pollution of earth and water, in all its loathsomeness, abounds at Lincoln, unless the letter of "Spero" in the *Lincolnshire Chronicle* of the 2d instant is a romance. As might have been supposed, the Home Secretary has not been thrown off the scent by the red herring which the Local Board drew across his nose, and it is now announced that one of his inspectors will pay an official visit to Lincoln early in October.

STAINED GLASS.

Redditch.—The large west window of Redditch Church has recently been filled with stained glass by public subscription, to the memory of the late Baroness Windsor. The principal subjects are "Feeding the Hungry," "Giving Drink to the Thirsty," "Clothing the Naked," "Visiting the Sick." The cost was £200. The window was designed and executed by Mr. Preedy, of London, architect, who has also executed other memorial windows, having in view the same object, in two new churches in the adjoining parishes erected from his designs. The one church at Webheath was erected entirely at the expense of the late Baroness Windsor, the other at Headless Cross was materially assisted by liberal contributions from the same source.

York.—The east end of S. Mary's Church, Castlegate, York, has just been embellished with a handsome stained glass window of the Perpendicular style, the subject being a connected scene of "The Adoration of the Shepherds," going through the entire window, which is of three lights. The subject is surmounted by canopies on a rich ruby ground, with architectural tracery of white and yellow. The three principal openings are surmounted by tracery filled with angels with musical instruments; these are also on rich ruby and blue grounds. The angels are chiefly of a silvery white and yellow glass, as usual in 15th century work. The colouring of the subject is on a grey-blue diapered ground. The window was designed and manufactured by Mr. Alexander Gibbs, 38, Bedford-square, London.

STATUES, MEMORIALS, ETC.

Kepler.—A monument to Kepler has been erected at Weildiestadt, in Suabia. It is a statue standing on a base adorned with bas-reliefs. In the astronomer's left hand is a parchment, on which an ellipse is drawn, and in his right is a pair of compasses. The bas-reliefs represent scenes from Kepler's life. The monument is the work of a sculptor of Nuremberg, named Kreling.

A Statue to Sir Humphry Davy is to be erected upon a new granite porch, over the entrance of the post-office, in front of the Market-house, in the centre of Penzance. The statue will be 8ft. in height, and will be carved from a block of Sicilian marble, weighing about three tons. A small model of the proposed statue was designed and modelled by the sculptors, Messrs. W. J. and T. Wills, of Euston-road, London, and submitted to the committee for their approval. The design having been accepted, it was resolved that the commission for the execution of the large statue be entrusted to the above-named artists, the same who so successfully completed the marble statue of the late Mr. Cobden, for London. The pose of the figure, says the *Cornish Telegraph*, is easy and natural, Sir Humphry — in the dress coat and overcoat, knee breeches, stockings, and ample cravat of half a century ago—leans gracefully, with his right hand on a safety-lamp, which, in turn, is supported by a rock. The left hand is upon the hip. Sir Humphry's face is not only a likeness (to judge by portraits) but has a pleasant and thoughtful expression. The statue, when erected, will stand between the two centre columns of the buildings, occupying a commanding position, and will be seen by every visitor and traveller entering the town. It will be but a few yards from the house in which he was born, and on the site of the old house where he served his apprenticeship.

◆

The Royal Archæological Institute has selected Cardiff as its place of meeting next year; and the Marquis of Bute will preside.

Our Office Table.

The Thames Embankment.—The waste spaces on the Victoria Embankment have within the last few weeks been undergoing conversion into what promises to be a most agreeable feature of this splendid thoroughfare. The ground has been laid out by experienced gardeners, as far as has been deemed practicable, and instead of the heaps of rubbish with which it was covered a month since, sloping banks are now to be seen covered with grass, and neat pathways, the borders of which are already planted with ground ivy. The space lying between Waterloo and Charing-cross bridges is, in fact, so far completed that it is stated it will soon be opened to the public. It will be planted with trees and shrubs, and no expense will be spared to render it worthy of its position. The ground between Westminster and Charing-cross is not in so advanced a state, but when finished it will harmonise with the other portion of the embankment. All the temporary lamps which were placed on the embankment when it was opened have now been removed and replaced by lamps similar in design to those on the Albert Embankment, and placed at close intervals. The standard lamps erected about six months since near Waterloo bridge still remain, none of the designs having, it is stated, yet been selected. Several additional improvements are in contemplation for the Embankment, and will shortly be carried out.

Whitworth Scholarships for 1870. — The award of the ten Whitworth Scholarships of £100 each for the year 1870 has just been made to the undermentioned candidates :—To those examined as students—William Garnett, 19 years of age, student, London; James Taylor, 21, mechanic, Oldham; J. A. Griffiths, 22, engineer student, Middleton; H. W. M'Cann, 17, student, Liverpool; J. Perry, 20, engineer, Belfast. To those examined as workmen.—Edward Tomkins, 24, engineer and draughtsman, Manchester; William Dodgson, 25, mechanic, Manchester; Frank Salter, 21, mechanical engineer, Leamington; Wm. S. Hall, 25, engineering draughtsman, Nottingham; Henry Dyer, 21, mechanical engineer, Glasgow.

Messrs. Milner's Safes and the British Association.—In compliance with a request from a numerous section of the British Association, some interesting experiments were on Wednesday week made with Messrs. Thomas Milner & Son's fire and thief-resisting safes, at the Phœnix Safe Works, Liverpool. In the first instance an ordinary cast-iron safe, without any fire-resisting chambers, and one of Messrs. Milner's ordinary fire-resisting safes, of the weakest quality, were tested in a large fire composed of coal and wood, the result being, after two hours and a half, that the former was entirely destroyed, while the latter remained intact, a £100 note and a large number of circulars which were placed in its interior being wholly untouched. In a second test one of Messrs. Milner's safes, containing a £100 note, several gold watches, and a number of circulars, was consigned to a terrific fire, in which it remained for five hours and a quarter without any effect of the flames—save a dulness in the colour of the iron—being visible, while the contents were perfectly unharmed. Afterwards there was a testing of the locks, and those of ordinary use were shattered to pieces from the effects of gunpowder, while Messrs. Milner's double patent gunpowder-proof and thief-proof lock defied the effects of gunpowder, and remained perfectly secure, after all the powder (60 grains) which could be introduced into them had been exploded, A number of attempts were also made to wedge open a safe, but without the slightest effect.

Chips.

The death of M. Svoboda, the historical painter, is announced at Vienna.

An extraordinary meeting of the North Metropolitan Tramways Company will be held on the 12th October, for the purpose of raising additional capital.

The death is announced of Mr. John Braithwaite, civil engineer. From the earliest formation of railways he has been engaged in their construction, both in England and on the Continent. He was 73 years of age.

The Cagliari Gas and Water Company (Limited) announce an interim dividend for the half year at the rate of 7 per cent. per annum, less income-tax.

Barlow Church, Derbyshire, was re-opened on Wednesday week after restoration and enlargement.

Hulland Church, Derbyshire, was reopened on the Wednesday week after restoration.

◆

Timber Trade Review.

◆

Messrs. Simson & Mason's last sale consisted of the following lots :—

100 Riga and Memel logs
75,000 Quebec deals, &c.
60,000 Quebec spruce, &c.
15,000 Lowerport spruce
15,000 Riga white
35,000 Gefle, Skonwick, &c.
25,000 Sundswall, Hudikswall, &c.
20,000 Gothenburg
45,000 Dram and Christiana
35,000 Other Swedish and Norway
&c., &c.

The following prices were obtained :—

	Per	£	s.	d.
Christiana 2nd yellow 2½ × 6½	120 12ft.	7	0	0
Do. 3rd do. 2½ × 6½	do.	6	10	0
Do. spars 4in. to 6in.	foot run	0	0	1⅛
Do. under 4in.	do.	0	0	⅞
Do. 2nd white 2½ × 6½	120 12ft.	5	15	0
Dram 2nd yellow do.	do.	6	15	0
Do. 3rd do.	do.	6	10	0
Do. 3rd white do.	do.	5	10	0
Gothenburg 3rd yellow 3 × 9	Petg. std.	9	5	0
Do. 4 × 11	do.	9	10	0
Do. 2½ × 8	do.	8	5	0
Do. 4th yellow 2½ × 9	do.	8	15	0
Gefle 3rd yellow 3 × 9	do.	9	15	0
Do. 2½ × 7	do.	8	0	0
Do. 3 × 7	do.	7	5	0
Do. 3 × 11	do.	10	5	0
Husum mixed yellow 3 × 9	do.	9	0	0
Hernosand yellow	do.	7	15	0
Hudikswall 1st yellow 4 × 10	do.	10	5	0
Do. 4 × 8	do.	9	10	0
Do. 3 × 8	do.	9	10	0
Do. 1½ × 7	do.	9	10	0
Do. 4 × 12	do.	10	15	0
Do. 4 × 11	do.	10	10	0
Do. 2nd yellow 4 × 10	do.	9	10	0
Do. 4 × 8	do.	9	10	0
Do. 3 × 10	do.	9	10	0
Do. 4 × 12	do.	9	15	0
Do. 2 × 7	do.	9	0	0
Do. 3 × 9	do.	9	10	0
Do. 1¼ × 7	do.	8	10	0
Do. 3rd yellow 4 × 11	do.	9	5	0
Do. 3 × 7	do.	9	5	0
Do. 4 × 12	do.	9	5	0
Do. 4 × 10	do.	8	15	0
Do. 2½ × 7	do.	8	5	0
Do. 4th yellow 4 × 9	do.	8	10	0
Do. 4 × 12	do.	8	10	0
Do. 4 × 11	do.	8	10	0
Do. 3 × 10	do.	8	5	0
Memel oak planks	load	5	0	0
Monksund 1st yellow 4 × 9	Petg. std.	9	10	0
Nordmaling mixed yellow 3 × 9	do.	9	0	0
Do 2½ × 7	do.	8	0	0
Do. 3rd yellow 3 × 9	do.	8	10	0
Do. 2½ × 7	do.	7	10	0
Do. mixed white 3 × 9	do.	8	10	0
Do. 2½ × 7	do.	7	10	0
Do. 3rd white 3 × 9	do.	7	10	0
Do. 2½ × 7	do.	7	10	0
Narva crown yellow 3 × 7	do.	9	10	0
Do. 2½ × 7	do.	10	0	0
Do. 2nd yellow 3 × 7	do.	8	10	0
Do. 2½ × 7	do.	8	5	0
Petersburg 1st white 3 × 11	do.	9	15	0
Do. 3 × 9	do.	9	5	0
Do. 3 × 7	do.	8	10	0
Do. 2½ × 7	do.	8	5	0
Do. 2nd white 3 × 11	do.	8	10	0
Do. 1st yellow 3 × 7	do.	12	0	0
Do. lathwood	cub. fthm.	£5 to £6 10s.		
Porsground yellow and white	120 12ft. 2½ × 7	6	5	0
Quebec 1st bright 12ft. 12ft. 3 × 11	Petg. std.	£19 15s. to £20		
Do. 1st dry floated	do.	17	0	0
Do. 2nd floated	do.	12	0	0
Do. 2nd dry floated	do.	12	10	0
Do. 3rd bright	do.	9	10	0
Do. 3rd floated	do.	9	0	0
Do. 3rd dry floated	do.	9	0	0

	Per	£	s.	d.		£	s.
Riga crown white	Petg. std.	8	5	0	to	8	10
Do. half crown	do.	7	5	0	,,	7	10
Do. lathwood	cub. fthm.	4	10	0	,,	5	10
Do. crown logs	18ft. cube	5	2	6	,,	5	5
Soderham 3rd yellow	Petg. std.	8	0	0			
Do. 4th do.	do.	8	5	0			
Swartwick 3rd yellow 3 × 9	do.	9	10	0			
Do. 4 × 9	do.	9	10	0			
Ternea mixed yellow 9	do.	7	5	0	,,	8	10
Quebec black walnut	foot cube	2s. 6d. to 3s. 6d.					
Do. birch	load	2	10	0	to	3	0
Skelleftea mixed yellow	Ptg. std.	8	10	0			
Skonvick yellow balks	load	2	3	0	,,	2	5
Saguenay 2nd spruce	120 12ft. 3 × 9	14	0	0	,,	14	5

Messrs. Churchill & Sim held a sale on the 22nd inst. of the first portion of the stock of a well-known timber merchant near Paddington Basin. It consisted of dry and seasoned Quebec pine and spruce deals, Petersburg, Swedish, Norway, and other deals and battens, prepared plain-edged flooring and matched boards, poles, lathwood, &c. Although the prices given were high when compared with those given for goods at the docks, the lots offered were fully worth the money, and those buyers who require well-seasoned wood cannot do better than attend the next sale.

A supplement to the *London Gazette*, published last night, notifies that Earl Granville has received from her Majesty's ambassador at Tours the copy of an official note of the 21st inst., from the French Foreign Department, announcing that the blockade of the German ports in the Baltic Sea has been completely raised by the French squadron.

◆

LATEST PRICES OF MATERIALS USED IN CONSTRUCTION.

Timber.

	£	s.	£	s.
Teak load	£13	0	13	10
Quebec, red pine	3	15	4	15
,, yellow pine	4	0	4	15
St. John N.B. yellow	0	0	0	0
Quebec Oak, white	6	0	6	10
,, birch	3	15	5	0
,, elm	4	5	5	5
Dantzic oak	0	0	0	0
,, fir	3	5	4	10
Memel fir	3	10	4	10
Riga	3	10	4	10
Swedish	2	13	3	0
Masts, Quebec red pine	3	15	5	5
,, yellow pine	3	15	5	5
Lathwood, Dantzic, fm	3	15	5	10
,, St. Petersburg	5	10	6	10
Deals, pr C., 12 ft. by 3 by 9 in.,				
Quebec, white spruce	13	0	18	10
St. John, white spruce	12	10	14	0
Yellow pine, per reduced C.				
Canada, 1st quality	16	10	18	10
2nd do.	12	0	13	10
Archangel, yellow	11	10	13	0
St. Petersburg, yel.	11	10	13	0

	£	s.	£	s.
Finland	£7	10	£8	10
Memel	0	0	0	0
Gothenburg, yellow	9	0	11	0
,, white	8	0	9	0
Gefle, yellow	10	5	12	10
Soderham	8	10	12	0
Christiania, per C., 12 ft. by 3 by 9 in. yellow	10	0	12	10
Flooring boards, per sq. of 1in., first yel	7	6	10	6
First white	7	0	9	6
Second qualities	6	6	8	6
Pumice Stone pr ton	6	0	8	0
Oils, &c.				
Seal, pale....per tun	36	0	36	10
Sperm body	82	0	83	0
Cod	39	0	0	0
Whale, Sth. Sea, pale	36	10	37	0
Olive, Gallipoli	48	0	49	0
Cocoanut, Cochin, ton	43	10	44	0
Palm, fine	39	0	39	10
Linseed	31	0	0	0
Rapeseed, Eng. pale	43	10	44	0
Cottonseed	27	10	34	0

Metals.

Lead —		£	s.	d.	£	s.	d.
Pig, Foreign	per ton	£17	10	0	£18	0	0
,, English W.B.	do	20	0	0	20	5	0
,, Lead Co.	do	19	15	0	20	0	0
,, Other brands	do	18	0	0	19	0	0
Sheet Milled	do	20	10	0	0	0	0
Shot, Patent	do	22	0	0	0	0	0
Red or Minium	do	19	15	0	20	10	0
Litharge, W.B.	do	0	0	0	0	0	0
White Dry	do	30	0	0	0	0	0
,, ground in oil	do	0	0	0	0	0	0
Copper :—							
British—Cake and Ingot	per ton	£69	0	0	70	0	0
Best Selected	do	70	0	0	71	0	0
Sheet	do	78	0	0	76	0	0
Bottoms	do	78	0	0	0	0	0
Australian	do	69	0	0	72	0	0
Spanish Cake	do	69	0	0	0	0	0
Chili Bars, cash	do	63	0	0	64	0	0
,, Refined ingot	do	69	0	0	71	0	0
Yellow Metal	per lb	0	0	6½	0	0	0
Iron :—							
Pig in Scotland, cash	per ton	£2	11	5	0	0	0
Welsh Bar, in London	do	7	5	0	7	12	6
,, Wales	do	6	15	0	0	0	0
Staffordshire	do	7	10	0	8	0	0
Rail, in Wales	do	7	0	0	7	5	0
Sheets, single in London	do	9	10	0	10	5	0
Hoops, first quality	do	8	10	0	9	5	0
Nail Rod	do	7	10	0	8	0	0
Swedish	do	9	15	0	10	0	0

◆

Trade News

◆

TENDERS.

Buckingham Gate.—For works at 19, James-street, Buckingham-Gate. Messrs. Middleton & Goodman, architects:—

Manley & Rogers	£1377
Carter & Son	1357
Nightingale	1350
Scrivener & White	1309

Camberwell.—For building the nave and aisles of the Church of All Souls, Grosvenor Park, Camberwell. Messrs. Henry Jarvis & Son, architects:—

Gammon & Sons	£6481
Thompson	5930
Dove	5855
Myers & Sons	5746
Longnure & Burge	5723
Henshaw	5703

Chelsea.—For S. Simon's Schools, Upper Chelsea :—

Ford	£1250
Lacey	1150
Nightingale	1142
Williamson & Brunt	1135
Cowland	1120
Steel	1111
Goff	1050
Parsons & Telling	1025
Puttick	1019
Whittaker	1010
Shillito	955
Barber & Groom	869
J. & A. Pearse	867

Cleygate, Esher.—For making alterations and additions to Torrington Lodge, the property of H. T. Edwards, Esq. Mr. F. Allen Edwards, architect :—

	£	s.	d.
Williams & Son	£1083	0	0
Stephens	974	10	0
Chessum	950	0	0
Whittick	895	0	0

Hull.—For new male wing to the Hull Borough Lunatic Asylum. Mr. W. Botterill, architect. Quantities supplied :—

	£	s.	d.
Fewster	£1389	0	0
Brown	1385	0	0
Goodwin	1365	12	9½
Habbershaw	1365	0	0
Hockney & Liggins	1355	0	0
Wales	1344	12	0
Halls	1325	0	0
Lison & Wilkinson	1322	6	5
Waller	1281	0	0
Jackson	1247	14	6
Evington & Wharram	1245	10	0
Masgrave	1242	0	0
Marshall	1240	0	0
Skinner	1168	0	0
Simmson & Frow	1167	15	0
Stanley (accepted)	1162	0	0

Holloway.—For finishing two houses with shops in Birkbeck-road, Holloway. Mr. N. E. Jennings, architect:—

Mann	£705
Nightingale	689
Faulkner	660

Kennington.—For National School, Regency-square, Kennington. Mr. C. A. Gould, architect :—

Jackson & Shaw	£749
Nightingale	733
Ebrow	733
Nixon & Son	693

Stockwell.—For Infirmary, Stockwell Orphanage :—

Colls & Son	£1588
Thompson	1575
Croker	1571
Gibbs & Son	1546
Tarrant	1539
Hart	1497
Nightingale	1386
Cullum	1350

Wandsworth.—For house and two shops at Wandsworth for Mr. Diplock. Mr. C. Foulsham, architect. Quantities furnished by Mr. Thomas Nixon :—

Nixon & Son	£1090
Colls & Co.	1075
Thompson	1060
Marsland	1053
Taylor & Pitts	1022
Taylor	970
Shillito (too late)	930

◆

CONTRACTS OPEN FOR BUILDING ESTIMATES.

S. Mary Abbott's, Kensington.—Extension of time to Oct. 7.—For the erection of a new infirmary and other buildings adjoining their workhouse. Reuben Green, Clerk to the Guardians, No. 1, Devonshire-terrace, Wright's-lane, Kensington.

Merthyr Tydfil Local Board of Health, Oct. 20. —Contract No. 1, for the construction of the main, branch, and distributing sewers, and other works required between Troedyrhiw and the line of the Taff Vale Railway, near Quaker's Yard Station, all in the parish of Merthyr Tydfil. The total length of the main and branch lines will be about 10,000 yards. Thomas Williams, Clerk to the Board, Merthyr Tydfil.

Dover Harbour, Oct. 8.—For the construction of works for the improvement of the harbour, including a dock and passage with one pair of gates, and deepening an approach thereto. James Stillwell, Register of Dover Harbour, Dover.

Metropolitan Board of Works.—Albert Embankment, Oct. 7.—For the erection of a new approach to the existing Lambeth Steam Boat Pier. John Pollard, Clerk of the Board, Spring-gardens, S.W.

Kidderminster Local Board Waterworks, Oct. 4. —For the following works, for the public water supply of their district :—Contract A.—Well and borings. Contract B.—Reservoir and other works. James Morton, Clerk to the Board, Kidderminster.

Godstone Union, Oct. 7.—For the erection of an old women's ward, at the workhouse, at Bletchingly. Alex. R. Stenning, architect.

Rochester.—S. Margaret's Highway Board, Oct. 5.—For the supply of surface picked flints, free from hassock, and broken to a size to pass through a ring 2½in. in diameter. Thomas S. Warne, Clerk.

Midland Railway, Oct. 4.—For the supply of goods break vans, and low-sided goods waggons. James Williams, Secretary, Derby.

North London Railway Company, Oct. 5.—For the building of a carriage shed at Bow. Robert S. Mansel, Secretary, Euston Station, London, N.W.

North Eastern Railway, Oct. 7.—For the supply o 500 tons of wrought-iron fish plates. J. Cleghorn, Secretary, York.

Portsmouth Drainage Works, Oct. 15.—Contract No. 10.—For laying down, constructing, and completely finishing, also for maintaining the same for twelve calendar months after completion, various brick, pipe, and cast-iron drains, for the purpose of conveying the storm-water into the harbour now discharged into the moats and mill-dam. S. J. Elliott, Clerk to the Local Board.

◆

BANKRUPTS.

(TO SURRENDER IN LONDON).

Henry Weeks, Grosvenor-road, Upper Holloway, builder, Oct. 10, at 11.—J. Holding and Alfred Dickens, S. Mary's-road, Hornsey, builders, Oct. 10, at 12.

(TO SURRENDER IN THE COUNTRY).

George Jones, Newport, Monmouthshire, builder, Oct. 10, at Newport.—George Till, Nottingham, builder, Oct. 7, at Nottingham.

PUBLIC EXAMINATION.—ACT, 1869.

Oct. 11, W. Barter, Bramshaw, Hants, builder.

DECLARATIONS OF DIVIDENDS.

M. & M. Slack, Hereford, timber merchants, div. 43-64d. —J. Meredith, Presteign, lime burner, div. 1s. 3½d.—H. Toy, Birmingham, brassfounder, div. 3½d.—J. Hutchings, Binstead, Isle of Wight, builder, div. 2s. 10d.

SCOTCH SEQUESTRATIONS.

Thomas Ingram, Glasgow, painter, Sept. 27, at 12.—David Moncrieff, Edinburgh, plasterer, Sep. 30, at 2.

◆

PARTNERSHIPS DISSOLVED.

J. and W. Webb, Silverdale, Staffordshire, builders.—Orr and Co., Hatton-garden, and Cotham, near Bristol, iron merchants.—Danicke and Co., Hatcham-road, Old Kent-road, metal refiners.—Anderson and Thompson, Frizington, Cumberland, builders.—Tuer and Co. Farnworth, near Bolton-le-Moors, engineers.—Garside and Stead, Horwich, contractors.—King and Sons, Mitre-street, and Minories, City, and Goulston-square, builders.—Hardeman & Tooth, Birmingham, plumbers.—Warren & Co. Greenwich, engineers.

BATH STONE OF BEST QUALITY.

Randell, Saunders, and Company, Limited. Quarrymen and Stone Merchants, Bath. List of Prices at the Quarries and Depots; also cost for Transit to any part the United Kingdom, furnished on application.

BATH STONE OFFICE,
Corsham, Wilts

[Advt.]

THE BUILDING NEWS.

◆

LONDON, FRIDAY, OCTOBER 7, 1870.

NOTICE.

◆

WITH the aid of the new postal arrangements which came into operation on the 1st inst., the Building News will in future be supplied through the post at 15s. per annum instead of 17s. 4d. as hitherto. The halfpenny postal card will also be found useful to those who have scraps of building information, tenders, intercommunication queries and replies, &c., to send.

THE CITY COMPANIES AND THEIR HALLS.

THE enormous increase in the value of land in the City of London of late years has necessitated economy of space and the remodelling of buildings planned under altered conditions and to suit different requirements; and the changes which have taken place during the century in trade and commerce, as well as in domestic habits, consequent upon the introduction of railways, have caused considerable alterations in the premises belonging to the various Livery Companies of the Corporation of London. In spite of the strenuous efforts that have been made from time to time to preserve them, the number of these Companies is gradually diminishing. According to a report made in the year 1837, by a commission appointed to inquire into the Municipal Corporations in England and Wales, the City Companies in existence at that time amounted to eighty-nine, but as the Commissioners excluded from their list several Companies which were practically extinct, or nearly so, there were evidently others which were nominally still extant, which would increase the actual number. The "Post Office Directory" for the present year gives the names of only seventy-nine City Companies, from which it will be seen that the process of extinction is still going on. Of this number, no less than thirty-eight, or one half, are returned as having no hall, their business being transacted either at the Guildhall or at the offices of their respective clerks. A considerable number of the halls have been rebuilt within the last few years, in one or two instances on a scale of great magnificence; but for the most part the hall premises have been curtailed in extent, and the ground thus obtained has been let on building leases, or the Companies have erected new premises which have been let as offices, retaining only a portion for their own use.

Almost the whole of the halls of the City Companies were destroyed by the Great Fire, and were rebuilt by Wren; but very few of them remain to this day, and none in the condition in which they were left by that architect. Of the halls of the twelve Chief Companies, Mercers' Hall, Merchant Taylors' Hall, and Vintners' Hall, are the only three of Wren's buildings which remain, and these have suffiered considerable alterations. The buildings fronting on Threadneedle-street belonging to the Merchant Taylors' Company were rebuilt by Mr. Philip Hardwick, about the year 1852, and are used as offices. The Hall, however, remains very nearly in its original condition, and is a noble room. The windows are Gothic, and it is not improbable, from the circumstance of its plan, which is quite Mediæval, and the superiority of its details to the rest of Wren's attempts at Gothic, that there were considerable remains of the old Hall spared by the fire, and that Wren endeavoured to restore it to something of its original character. A new coffered ceiling was added to the Hall by Mr. I'Anson, about fourteen years ago, and some additions to the Hall premises are now going on also under his direction.

The premises attached to Mercers' Hall were altered, and some parts rebuilt, by the late Mr. George Smith. Grocers' Hall and premises were rebuilt by the late Mr. Thomas Leverton. Drapers' Hall, in Throgmorton-street, was repaired, and a new street front added by Mr. Robert Adam, of Adelphi celebrity. Adam's front has been recently replaced by a new front by Mr. Herbert Williams, the surveyor to the Company, who has also rebuilt the hall and court-room. The quadrangle, which was a very pleasing example of Wren's work, was destroyed to make room for the rebuilding. Fishmongers' Hall, which had a very picturesque river front of red brick, was pulled down to form the approaches to new London Bridge, and the present building was erected by Mr. Roberts. The basement story is imitated from Inigo Jones's. Goldsmiths' Hall was removed to make way for the General Post-office, and was rebuilt by Mr. Philip Hardwick about 1832. Skinners' Hall has a new front, and was remodelled by Robert Adam. Haberdashers' Hall, in Gresham-street, was rebuilt a few years ago, and the front part used as offices. Salters' Hall, and the premises adjoining, were entirely rebuilt by the late Mr. George Smith. Ironmongers' Hall, in Fenchurch-street, has had a new front. Vintners' Hall remains very much in its original condition, with the exception of the back portion, which has been altered in consequence of the construction of Southwark Bridge. Clothworkers' Hall, which was not entirely consumed by the great fire, was entirely rebuilt about ten years ago, by the late Mr. Samuel Angel. This is one of the last of his works, and is very successfully carried out.

Of the minor halls built by Wren, Dyers' Hall, Dowgate-hill, has been entirely rebuilt; Leathersellers' Hall, S. Helen's-place, also rebuilt by the late Mr. Pocock; Tallow-chandlers' Hall, Saddlers' Hall (Cheapside), Masons' Hall (Basinghall-street), Coopers' Hall, Weavers' Hall, have all been rebuilt very recently; Plumbers' Hall, Great Bush-lane, Cannon-street, was turned into a warehouse many years ago, and finally obliterated by the Cannon-street Station of the South-Eastern Railway; Founders' Hall, Lothbury, was destroyed by the improvements in forming the London Bridge approaches; Joiners' Hall was used as a warehouse; Pinners' Hall, Old Broad-street, has been converted into offices; Tilers' and Bricklayers' Hall, Leadenhall-street, is used as a literary institution, and now called Sussex Hall; Stationers' Hall was entirely rebuilt by Milne in 1805; Apothecaries' Hall yet remains, although menaced by the proximity of the London, Chatham, and Dover Railway; and with Painter-Stainers' Hall, and perhaps one or two halls belonging to minor companies, constitute all that remains of Wren's works.

We have now to chronicle the contemplated conversion of two large city properties, belonging to the Clothworkers' and the Curriers' Company respectively, which will serve to illustrate the manner in which changes that have taken place in the disposition of the city halls and offices have been effected.

The Clothworkers' Company are the owners of a large plot of ground in the rear of Nos. 26, 27, and 28, Monkwell-street, and adjoining, on the northward, to the churchyard of S. Giles, Cripplegate, at the extreme north-west extremity of the city boundary. The ground is very irregular in shape, and follows the line of the ancient city wall, and includes the site of an old bastion, which projects into the churchyard on the north-west. This plot of ground was formerly the site of some almshouses belonging to the Clothworkers' Company, which have been removed; and it is proposed to let the ground by tender on a building lease for a term of eighty years from Michaelmas-day next. The chapel attached to the almshouses, adjoining the old churchyard wall, is not to be removed; and provision is made on the plan for access to and affording light to this building. The total area of the ground is 9,652ft., and the lessee is to erect upon the premises within the first two years of the term of the lease good and substantial buildings, with all new materials, at an outlay of not less than £10,000. The frontage next Monkwell-street is very small, being only 15ft. 2in., exclusive of a cartway on the ground-floor 12ft. wide, to be reserved as a right of way to the chapel; but from the site being bounded on the north and west side by the churchyard, and the few difficulties that are apparently presented by the existence of ancient lights in the adjoining premises, the ground may be advantageously laid out for warehouse buildings, and will no doubt command a large rental.

The other property to which we have referred is the estate of the Curriers' Company, which comprises the houses No. 4, 5, 6, and 7, on the south side of London Wall, and the premises in the rear in Curriers' Hall-court, including Curriers' Hall. The whole of this property is, with the exception of a small part which has been already let and occupying an area of about 6,930ft., intended to be let by tender on a building lease in a similar manner to the ground belonging to the Clothworkers' Company. The lessee is to erect upon the ground suitable buildings for the use of the Company, including a hall containing 700ft. of clear space and 20ft. high, clerks' offices containing 600ft. of space, beadle's house, and other buildings similar to those attached to the present hall. These buildings are to be erected in the rear of the site, and may be either detached or incorporated with the other buildings proposed. The tenders are to be accompanied by a plan explanatory of the general arrangements of the proposed new hall and other buildings, and the nature and purpose of the proposed new buildings are also to be stated. The lessee is to expend a sum of at least £12,000 in erecting and finishing buildings on the ground to be leased, which does not seem too much considering the size and character of the buildings required. The tenders are to be delivered at Curriers' Hall, London Wall, not later than the 14th day of November next.

These particulars will give some idea of the changes which are going on, which are rapidly transforming the appearance of the city, and sweeping away the few remnants that are left to us of the times of Charles II. and of Queen Anne. These changes are almost universally for the better, because new and appropriately constructed buildings replace the decayed and unsuitable edifices of a former generation, but the antiquary can but regret to find these landmarks of history gradually disappearing before the advancing tide of change and commercial prosperity.

◆

STREET ARCHITECTURE BY MR. ARTHUR CATES.

WE can sincerely congratulate Mr. Cates, on whom the mantle worn so long and successfully by Mr. Pennethorne has fallen, upon the result he has achieved in two examples of domestic architecture with which he has recently embellished this metropolis. We refer to the premises built by him for Mr. Richard Attenborough, No. 33, Piccadilly, and The Hammam, No. 76, Jermyn-street. The former building is a large rectangular block, with a frontage of about 53ft. towards Piccadilly, and 60ft. towards Swallow-street, and 46ft. towards Piccadilly-place. As an example of shop architecture it is highly to be commended, for all the special difficulties—no small ones, as our readers know full well—have been resolutely and thoughtfully met. While every needful concession has been made to the universal craving among shopkeepers for space for the exhibition of goods in the ground-floor windows, the superstructure does not seem to stand upon insufficient supports. At present, the contrast of colour between the materials of the ground story and of those above, the former being all of dark hues and the latter comparatively light, gives somewhat of this appearance, but time will undoubtedly soon bring them more into harmony, and then any effect of that kind will vanish.

A good reason has dictated the choice of the sombre materials of which the shop fronts are composed—namely, the wish to enhance by contrast the brilliancy of the class of goods to be displayed. This desired result has been successfully achieved, and we are informed that silver-work has never before been so admirably set forth. The structural piers, decoratively treated as groups of pilasters, are of Lizard serpentine, arranged according to the different tints of the various beds. The most projecting pilasters are of lavender Poltesco of two tints, the next are of dark green Balk. The window jambs, which are moulded into deep hollows, are of black Killdown, the upper portions being enriched with delicate intaglio decorations and gilt. The plinths are of dark gray granite, and the dados under the shop windows are panelled with Signal-staff and Poltesco serpentine. The architrave is made of bright Poltesco, the frieze of Sicilian marble, and the cornice is of Portland stone richly carved. The joints in the pilasters are covered by decorative bands of bronze, and the shop sashes are of bronze, as also the capitals and the bases of the pilasters.

A novel and excellent feature in this ground story is the manner in which the windows are deeply recessed, so that spectators may stand in the spaces thus left without incommoding or being incommoded by the foot-passengers on the pavement.

The combined effect of these precious materials is very sumptuous ; the light Sicilian frieze, perhaps, looks cold, and is somewhat in strong contrast to the parts below, but has been chosen to throw up in relief the letters of the owner's name, which are affixed to it ; and the Portland stone cornice seems a poor finish to this order of the ground story. Some confusion is also produced by the immediate juxtaposition of the dark richly-wrought bronze casting under the serpentine architrave. This being on the same plane as the frieze and architrave seems to add another member to the order and detract from its legitimate ones. But, notwithstanding these drawbacks, this shop-front is highly satisfactory, both in general effect and in the artistic design of the details, and in its execution. It is refined as well as rich, and displays an admirable amount of thought and care on the part of the architect. The superstructure, though by no means deficient in the same qualities, is not so striking. Doubtless it was intended to act as a contrast to the lower and principal portion of the building. But to effect this end harmony has been somewhat sacrificed. In our remarks upon Mr. Thomas Wyatt's new buildings in London, we spoke with commendation upon the rich colour obtained by the use of red brick and stone dressings, and as picturesque masses of buildings, his are more effective than than Mr. Cates's, although in point of style and architectural refinement, and excellence of detail, they are immeasurably behind his. We could, therefore, have wished for the latter more colour in the general mass and a better skyline. The pasty Suffolk brickwork of the walling is unrelieved by the Portland stone dressings, and much elaborate and delicate work is comparatively lost, and the small amount of rose-coloured terra-cotta introduced on the third story makes us only long for more of it. Still, the work presented to us is very good of its kind, and we feel bound to be thankful. Of course we are at liberty to object to the style employed, and shall accordingly do so. It is Renaissance, of the character so largely employed in Paris, and its treatment need yield to that of no building that we remember in that city. When we speak of its purity of style, therefore, it must be understood with reservation. Purer still it might have been, if either true Italian or Gothic had been wrought out with the same taste and fidelity. Some little variety of colour has been obtained in the first story by panels of rose-coloured granite, incised with the names of the various articles sold at the establishment, the incisions being gilt. The second story is enriched with a band of sculptured shields, with the arms of different cities and states, and the third with the panels of red terracotta before mentioned. Above, a rich range of dormer windows produces a striking effect, but rather crushes the roof, which is deficient in boldness, and a central projecting portion of this seems purposeless and ineffective ; and the iron fender-work of the ridge, like most modern crestings of the kind, we could have well dispensed with, as it looks stuck upon instead of growing out of the roof, and is a mere useless and intrusive piece of ornament. All the interior finishings and fittings display the same delicate and excellent design and execution, which in our opinion is more fitted for internal than external effect, so that we find within but little to take exception to, and much really to admire.

The other building which we have named —the Hammam in Jermyn-street, displays much the same sort of careful design and execution throughout its details, but the style borders upon Gothic in the treatment of its parts, and the colour is more effective, red brick having been used as the groundwork. It is, however, evidently throughout but an experiment in Gothic by a mind trained in an Italian school. It lacks the vigour and spirit of Mediæval work, and must share the fate of every compromise by failing to satisfy thoroughly the adherents of either school. Still, it displays the utmost care and much thought throughout, aud deserves to rank highly as a modern specimen of street architecture. The metal columns used to support the lintels of wide openings, which by their necessarily meagre proportions detract from the other well-studied dressings of these features, are to our mind the most objectionable part of the design, and we call particular attention to them because the experiment was one that many architects have sought to make, and now that it has been made we think they may remain satisfied with the ancient and orthdox treatment with stone columns as far preferable.

LONDON ARCHITECTS AND LONDON BUILDERS.

ARCHITECTS and builders are all agreed that the evils arising from ill-considered conditions of contract cry loudly for reform. We therefore hail, as a public boon, every well-meant endeavour to compile any written form of agreement or of general clauses likely, even if not absolutely faultless, to meet with general acceptation. We say, "general acceptation" by the entire body of architects and builders, both in London and the provinces. Were all the builders and all the architects in London to come to terms on this vexed question, the ignoring of the "craft" in the provincial towns would be fatal to the healthy durable solution of this great difficulty; and for this reason—the London mode of contracting is peculiar to the metropolis alone ; and hardly has its counterpart in any provincial town great or small, east, west, north, or south of S. Paul's. Nor will it meet the question to urge that, when London has been enlisted in any given movement of "the craft," the provinces are sure to follow, and may be safely ignored. If any one will travel about England—especially into Yorkshire and Lancashire, our two largest counties—he will, on inquiry, arrive at the conclusion that, as a rule, for every ten buildings that go up without an architect in the large provincial towns there are at least fifty such buildings in th metropolis—in other words, that an architec in London is, as a metropolitan builder, b no means so important a personage as hi brother practitioner in the provinces. Nor i this all—the provincial towns are prett obstinately wedded to their own modes an customs. Every country architect is more o less of a surveyor—that is to say, of work undertaken in his own office. He takes ou his own quantities, and measures up his ow extras and omissions, if not personally, by hi clerk. If he has a desire for adding F.R.I.B.A to his name, he duly pays down his fou guineas a year, and, we presume, duly sign the bye-laws of that respectable body ; but, as rule, he goes on quantity-taking and measurin his extras and omissions just as before. It must moreover, be added that, even London arch tects, members of the Institute, when the migrate into the provinces, find themselve compelled to drop the London practice abstaining from "quantities," &c., and to fa into the provincial customs. There are, course, exceptions, but they are rare. We ar speaking of the rule : we could name at th moment a town of some architectural consequence, not 100 miles, not north but south, London, where the idea of any one but th architect issuing his own "quantities" woul be scouted as so inconvenient as to be impracticable. In the North and West of En land the rule of *every architect his own survey* has obtained from time immemorial.

From all this it will be at once seen how futile in all probability would be any attempt t solve this problem of building conditions tha ignored the state of architectural practice i the provinces. We much fear that the considerations we have been urging have bee lost sight of in the drawing up of the "bas of agreement" that *somehow* have bee "settled" between the Royal Institute Architects and the London Builders' Societ We say "*somehow* settled," for really it woul seem, from the sudden and un-announce mode in which it comes on the building publi *of even London*, to have been a very hole an corner affair. The document consists of 2 clauses, and a concluding memorandum, th sting of the 20 clauses being very appropr ately found in the tail of the documen headed "arbitration clause," and the concluding memorandum forcibly reminding on of the P.S. of the lady's epistle, which reall comprised all she had to say of any speci consequence. Here they are :—

> 20. ARBITRATION CLAUSE.—With regard to quantity or value of extras and omissions, or variations o the contract and questions of delay, or the withhol ing of certificates, or the true intent and meanin of the drawings and specification as to cost—th arbitrator *being* (*sic*) an architect *and a Fellow of th Royal Institute of British Architects* agreed to b the parties, or appointed by the President (for th time being) of the Royal Institute of British Arch tects. The arbitrator to award costs between employer and contractor.
>
> MEMORANDUM.—In cases where the quantities a provided, it is recommended that, unless a survey be mutually agreed upon by the architect an builder, two surveyors be employed to take off th quantities, one appointed by the architect and th other by the builder, at a meeting convened for th purpose.

This 20th clause and memorandum, it wil be seen, comprise in, as it were, a nutshel the whole *questio vexata* on which Englis architects and builders have been at issue fo we cannot say how long; and, as we hav just said, the sudden appearance of thes "general clauses *as settled*" has somewhat unsettled our architectural nerves. We hav not at the moment any means of ascertainin what proportion of London builders is absorbed by the London Builders' Society ; doubtless a considerable number. We have, however, a very strong impression that th Institute of "British" Architects, so far from gathering within its bosom any considerabl number of architects "of that ilk," absorbs very small proportion indeed of even Londo architects ; and this being the case, we cannot help thinking the London Builders' Society has taken rather an unchivalrous advantage of our good friends in Conduit-street ; that, in fact, "not to put too fine a point upon it," these London builders have quite forgotten the good old rule, "Hit somebody of your own size," poor Grimaldi used to promulgate in our younger days. We should really like to know, in these days of plebiscites and Vatican Councils, what was the exact amount of unanimity, not merely within the Council of the Institute, but among the entire members of that body—a very small one, with, if we mistake not, a muster-roll much smaller than that of the Architectural Association. In fact, while we write, a host of other questions crowd upon us, space for all which, we fear, the Editor would utterly deny us. Did all the Hungarian bishops—we mean the country Fellows and Associates—agree to these general clauses, especially to clause No. 20 ? Did they all see and approve of the final memorandum, or was it only an after-thought of the Council ? If they all did, are they prepared to give their country clients and contractors a taste of these London clauses ? If not, why not ? The more we think about it, the more numerous are the queries we should like to put. True, it is not our affair : it is an affair of the Institute ; but then, let us not forget it is the Institute of *British* Architects—*our* institute, in fact ; though, somehow, so very many of us do not and will not belong to it. Why do not we belong to it if it is British, as really, having Her Majesty's charter, we all wish it to be ? Let us hope—and ask no more impertinent questions—that these "clauses of contract *as settled*" will either establish the infallibility of the Institute, and so compel every man of us to come into the Conduit-street fold, or that some good, bold, rampant architectural "heresy" may be inaugurated, and bring about an entire revolution in architectural practice. We really must have either the British architects coming into the Institute, or the Institute made to correspond with the British architects. Nothing good can possibly come of this piecemeal—we might say "peddling"—legislation. W. Y.

◆

NOTES FROM NEWCASTLE-UPON-TYNE.

(FROM A CORRESPONDENT.)

(*Concluded from page* 238.)

TAKING its size into consideration, few towns possess more fairly good churches of the Establishment or more ugly Dissenting chapels than Newcastle. I have already mentioned one or two instances of the latter, but there are quite as flagrant examples remaining to be cited. One of the worst is situated at the west end of the town, in Park-road, and closes the vista of a street a quarter of a mile long. In traversing this thoroughfare every passenger is oppressed by the monstrous building looming in the distant perspective, growing gradually more and more appalling as it is nearer approached. It rears

"Its miscreated front athwart the way,"

a monument to the genius of the architect, and a proof of the sagacity of the building committee.

While upon the subject of architectural abortions in Newcastle, it would be unfair to omit two recent specimens. One of these is the staircase at the end of a new portion of the borough gaol. This consists of a curved bay projecting from the main building, and contains windows with the sills, heads, and even the sash-bars worked into a sort of double curve (decidedly not "the line of beauty"), following no doubt the rake of the stairs inside. The effect of the whole is simply ridiculous, and can be better imagined than described. The other "gem," to which I beg leave to draw attention, is a doorway in a new block of buildings in Gallowgate. There are shops on the ground floor of these premises, and, as usual, an entrance into the corner shop has been made at the angle, which is splayed off to receive the doorway. The building above, however, is brought out to the square, and the junction between the two is made by masonry forming (what I may term, for want of a better definition) a segmental concavity beneath the overhanging part ; a piece of sham construction, which would not stand except for the wood panpiece above it, intended ultimately to be concealed. But the worst remains to be told. The head of the entrance doorway is in the form of a flattened arch, and goes up into the concave termination of the splay already mentioned. A moulding is carried up each door jamb and round the arch. The result is a distortion which "beggars all description." I fear my attempt to represent the peculiarities of this *bijou* is very imperfect, but if any of the readers of the BUILDING NEWS are sufficiently interested to lay down on paper an arch curved in a certain degree on plan, curved again in another manner on front elevation, and curved once more in a different way when viewed from the side, they will no doubt arrive at a slight idea of the treat afforded by the fearfully and wonderfully constructed doorway in Gallowgate. For my part, I could not believe it to be the work of an architect, until a fatal accident occurred at the building, and brought his name to light.

But now let me turn to more pleasing topics. The restoration of the grand old steeple of S. Nicholas is now complete (with the exception of the re-instatement of the clock and its dials). By-the-way, the view of this steeple issued in the BUILDING NEWS "Sketch Book" some months ago was a very poor one, and inadequately represented the beauty and the proportion of the structure, besides being incorrect in several minor particulars. The restoration of the steeple has given unqualified satisfaction to the people of Newcastle, and certainly a mighty improvement has been wrought in the treasure of which they are so justly proud. But the greatest amount of work has been executed underground and out of sight, and probably not one in ten Novicastrians knows of the difficulties which have been surmounted, and the pains that have been taken by architect, clerk of works, and contractor, to make the steeple of S. Nicholas as sound in reality as it now looks upon the surface. The foundations have been underset to a great depth ; the turrets and their crocketed spires to a considerable extent rebuilt ; the flying buttresses or arches carrying the lofty lantern made secure and strong, and iron lattice girders introduced to tie their feet together. Wrought-iron chains or straps have been placed round the tower at different stages to bind the whole firmly together. The spiral staircase inside has been entirely renewed, and the present perpendicular newel demonstrates the great extent to which the steeple had departed from the plumb. A very large proportion of the exterior has been re-faced with stone, and the old wooden louvre-boards in the belfry windows have disappeared, and slabs of slate of large size and fewer number have taken their place, thus diminishing the "brewery" appearance of the English style of louvres. The mullions of the belfry windows were found disgracefully slender and actually strengthened behind by balks of timber to which they were strapped. Those have been removed and replaced by new mullions extending the entire thickness of the walls, and the opportunity thus offered has been taken to give greater richness and depth of effect to the belfry windows by increasing the reveals of the jambs, mullions and tracery. The internal appearance of the church below the tower has also been greatly improved. The massive piers have been stripped of the whitewash which successive generations of churchwardens had bestowed upon them ; fresh masonry has been inserted where necessary ; the mouldings and splays restored, and the whole cleansed and made as perfect a possible. It is intended to commemorate and enhance the restoration of the steeple by the insertion of stained glass in the great west window. A limited competition took place for this work, but I do not think any design has yet been determined on.

One of the largest buildings lately erected in Newcastle is the new Infirmary of the Union Workhouse at North Elswick. Although strictly utilitarian in purpose and appearance, the edifice is a pleasing one both externally and internally. It is built entirely of stone, and is as substantial an erection as can anywhere be seen. I believe the plan is a good and complete one, and that the building has been highly eulogized by the Government officials who have visited it. The architectural effect of the large quadrangle is, however, much injured by the high division wall separating the airing courts for the different sexes. It should be reduced in height and concealed as much as possible by shrubs and climbing plants. The high wall next the turnpike cuts off much of the view of the building from the road. This is to be regretted, for although the infirmary possesses no ornament in itself, its general appearance is really an ornament to the part of the town where it stands, and contrasts most favourably with the older parts of the workhouse adjoining it, and indeed all the surrounding buildings.

Among forthcoming works in Newcastle are the new police-courts, and the new post-office. The latter will be erected nearly opposite the west end of S. Nicholas Church, no doubt from the designs of the Government architect. The police-courts are to be situated in Pilgrim-street, opposite the end of Shakespeare-street. It was at one time decided by the Town Council to invite competition for the design of this building, but the decision was reversed, and the property surveyor of the Corporation is to be the architect. He has prepared several designs, both Gothic and Classic, but (luckily) none has yet been selected.

The Northern Architectural Association has its head-quarters at Newcastle. Its meetings are held in what the convening circulars quaintly term "The Old Castle, Newcastle." It appears never to have occurred to the officers that the *old* castle is really and truly *the* Newcastle-upon-Tyne. As it is, the heading of all the Association's note-paper displays this singular and incongruous blunder. I regret to say that the body is a sleepy one, and practically useless (what the Yankees would call *effete*). The last "usual quarterly meeting" was held some two months behind its time, and even the papers notified to be read on the occasion were not forthcoming. Few, however, would be disappointed thereby, for the attendance was, as usual, very small. The younger branches of the profession got up, about a year ago, an independent society. This made the senior association start from its slumbers and display unwonted activity for a time, but this soon wore off, and it is now as drowsy as ever. As for the Northern Architectural Students' Society, it still exists in a lively condition, and no doubt will do so if the members continue to support it properly. I hope it may never share the fate of the many societies which young men so often get up and float, only to sink them when their novelty has worn off.

Let the architectural students of Newcastle act more earnestly and determinedly than this, and they will have no cause to regret the time spent in the business of their society. Its objects are good, and in working for its prosperity the members are sure to find many ways of improving themselves in the knowledge of their profession.

◆

DISCOVERY OF THE FOUNDATION STONE OF OLD BLACKFRIARS BRIDGE.

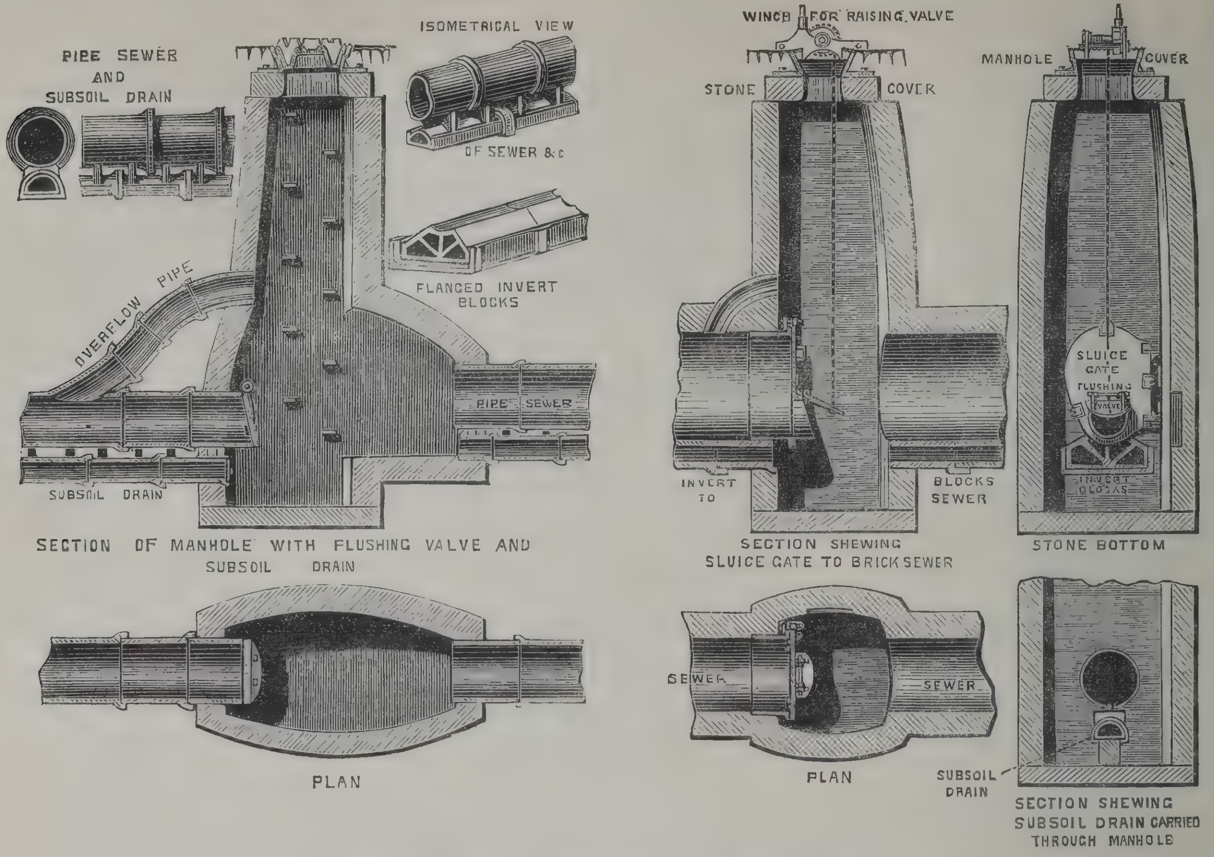
CONSIDERABLE disappointment has been felt ever since the demolition of the old Blackfriars Bridge in consequence of the failure of the exertions made by divers and others to find the foundation stone of the bridge, which was known to contain a number of coins of the realm and documents of great interest. Nothing, however, of its whereabouts could be discovered until Friday afternoon, when some of the navvies, after digging about forty feet under the bed of the river, struck upon some hard substance, and ultimately they found it was the lost treasure. With great skill the relic was recovered, safely landed on the embankment, and carefully watched. The whole of the contents of the stone, which weighed about 120lb., were in an oak chest, having a metal tablet, on which was engraven in large characters this inscription :—

"On the last day of October, in the year 1760, in the beginning of a most auspicious reign of George III., Sir Thomas Chitty, Knight, the Lord Mayor, laid the first stone of this bridge, undertaken by the Common Council of London on the night of an extensive war. The bridge being for the public accommodation," &c.

The stone and everything else at present found have been removed to Spring-gardens for safe keeping.

◆

A survey of Sussex, on an extended scale, has been ordered by the Board of Ordnance, and in the course of a few weeks the Royal Engineers will be at work in the eastern part of the county collecting the necessary information for the purpose.



CONSTRUCTION OF SEWERS IN RUNNING SAND.

ON THE CONSTRUCTION OF SEWERS IN RUNNING SAND.

By Messrs Reade and Goodison, Civil Engineers.*

ALL who have had experience in engineering are aware that the most valuable knowledge is often that acquired while contending with unforeseen difficulties. The introduction of the present subject to the notice of the British Association will therefore, we hope, require no apology beyond the simple statement that some of the sewerage works entrusted to us having been executed in difficult sandy ground, we are desirous of recording for the use of others some of the experience necessarily obtained. Probably no one who has not watched the process of laying sewers in ground similar to that which distinguishes the land on the Liverpool, Crosby, and Southport Railway, the whole distance from Waterloo to Southport, can form any idea of the difficulties that have to be encountered. The whole of that district is one mass of sand, resting on a bed of moss and marl, varying from 10ft. to 20ft. deep below the surface; and having no natural drainage—in consequence of the elevation of the shore line of sandhills—in wet seasons, in the lower portions or slacks, flushes of water form. The permanent water level in the dryest seasons in these places is only a few feet below the surface, while sink where you will, before you get to the depth necessary for a sewer, you are sure to come to water. Now water in gravel or rock is not difficult to contend against, but in fine blowing sand it forms a subsoil of running sand or quicksand of the most lively and insinuating description. Sheet pile or trench as you may it streams in between the sheeting in streams of sand and also forces itself bodily upwards in the bottom of the trench by a species of disguised hydrostatic pressure. To keep open more than a short length of trench the full depth during the laying of the pipes is impossible, and consequently the difficulty of laying the invert of the sewer to a true gradient is immensely increased, while the low gradients demanded by the general flatness of the country require for the efficiency of the sewers extreme accuracy. When practical, in order to relieve the ground of water, it is advisable, we find, when it can be done without timbering, to open ou; a long length of cutting about 5ft. or 6ft. deep beyond where the pipes are actually being laid. In our works, from motives of economy and other reasons, we have mostly used pipe sewers, socketed, glazed, and jointed in cement. Theoretically, such pipes with cement joints should form impervious sewers, but they do not; with the ordinary system of laying we know this to be impossible. The consequence is that where you have several miles of pipes the subsoil water that enters the sewers is enormous. Summer or winter the flow is unceasing, nor is this in itself a disadvantage, but rather the contrary, for the tendency of the flow is to keep the sewer sweet and clean. The Blundellsands main sewer, which, with subsidiary sewers, is about 2½ miles long, in dry frosty weather last winter when gauged showed a discharge of 180 gallons per minute, three-quarters of which at least would be subsoil water; and apparently, except during rain, the flow does not materially differ at various seasons. This, then, as far as the water is concerned, is a distinct advantage, but along with the water sand streams in, and forms a deposit along the whole length of the sewer, which is only removed by frequent flushing. In every case where pipes are laid in running sand, however well and carefully the joints are made, we find this to occur. To get the cement to set before being washed into the sewer is no easy matter. In laying the pipes, about 20 yards of timbered trench is opened at one time. A dam of sods, &c., is then formed across it in front of the pipes, and the sand between it and the pipes is dug out until a hole is formed from which the water can be baled out into the trench above, from which it is pumped to the surface. When all is prepared, the pipes are lowered down into the trench one by one, the joints bedded being laid on a bed of clay puddle 6in. thick; the joints are then made good with quick-setting cement, and the cement is covered all round with a good collar of clay puddle to prevent it being washed into the sewer. With very great care and judgment a good sewer may thus be formed, but not a water-tight one, and we always find that the subsoil is drained nearly to the level of the invert in the very best and most carefully constructed sewers we have yet seen. This in itself is a positive advantage, but the consequent admission of running sand—and it is astonishing how fine an opening it will run through—is an evil which it would be well if possible to guard against. In addition to this, the sinking of the baling-out hole while laying the pipes has a tendency to draw the end pipes downwards, and thus interfere with the true gradients of the sewers. In all sewers in ground of this nature we have also to form wha is called a sump-hole at the bottom of each manhole, or these will speedily get choked. By the aid of the flushing apparatus, which we shall presently describe, the deposit in the sewers is flushed into these sump-holes, and then cleaned out at intervals. It is difficult to convey to any one who has not seen it the insinuating nature of this sand, but by attention and frequent flushing we find that well laid pipe sewers in such ground can be kept clean and sweet. Though sewers are possible and effective, laid in the manner just described, it is a matter of much care and attention to get them laid properly, and it is really essential that a clerk of the works should himself see every individual pipe laid; with all this, still imperfect joints occur, for as soon as the baling, out ceases, as the pipes are practically plugged up with a straw plug, which is drawn through the sewer to keep it clean, the level of the water rises sometimes even above the top of the pipes, and the hydraulic pressure thus created will find out all imperfections, and sometimes prevent the cement setting properly. Again, in putting in the sump-holes, the tendency is to draw the nearest pipes out of level, and indeed the most satisfactory way of getting them in is to sheet pile them all round. Having had all these manifold difficulties to encounter we set ourselves to try and devise some method by which greater care in and perfection of laying could be obtained.

The model of the subsoil drain and pipe rest we now have the honour of showing you is partially the result of our experience in laying sewers in sand.

At our suggestion Messrs. Brook & Son, of Huddersfield, the fire-clay pipe manufacturers, have worked out the invention in a practical form, and we are now commencing to use it in the sewerage works at Birkdale. The primary object of attainment is this—to get a dry subsoil wherein to lay the pipes, that the cement joints may have time to set and become water-tight, and by securing more time for the laying of the pipes, laying a greater length at a time, and the prevention of disturbance or drawing of the pipes while preparing the next excavations, to ensure greater certainty and perfection in the gradients and junctions, and consequently improve the general system of pipe sewerage. That this is of the utmost importance none who practically understand the subject can doubt. for the difference between brick sewers and pipes often means whether sanitary work shall go on or be stopped. The subsoil drain, it will be seen by an inspection of the model, is in internal section a semicircle, and varies in diameter according to the diameter of the superimposed sewers; for 2ft. pipes we purpose using drains 1ft. diameter; for 1ft. 6in., 9in. diameter; and for 1ft., 6in. diameter. The length is the same as those in the sewers, that is, either 2ft. or 3ft. as the case may be. The larger pipes we use in 2ft. 6in. lengths. Each pipe is socketed, and the sides being brought up square a shoulder is formed, on which the bricks forming the rest, which also fit the top of the drains and the curvature of the pipes, are laid. The pipes in the sewer above are arranged so that they break joint with the sub-soil drains and the ends of each sewer pipe rest on the adjoining subsoil pipes. It will be seen that this arrangement secures ample space under the sewer for making the cement joints good. The operation of laying the subsoil drains is somewhat similar to that previously described as the mode we adopted for laying pipe sewers before employing this invention, the only difference being that the joints are made in clay alone, and from the small size of the pipes they can be handled and laid much more readily; slight imperfections in the gradients also will not be of the same consequence as in the sewers. When a sufficient length is opened out, we commence laying the sewer pipes upon the brick saddles or rests, which have previously been accurately laid to the proper levels from sight rails in the usual manner. As this can be done without hurry or confusion, a more perfect sewer is the result. The subsoil drains are continued through some of the manholes, as shown in the engraving, and are united to the main sewer at intervals, discharging their contents into sump-holes which retain the sand that may be brought down by the water and which then can be readily cleaned out when necessary. In each of the intermediate manholes where the subsoil drains are carried through they will be fitted with a disc plug on the top for the purpose of flushing. When the flushing valves (to be hereafter described) are down, the removal of any of these disc-plugs will allow of any portion of the drain being flushed with a good head of water. It will thus be seen that while we retain all the advantage of subsoil water, we avoid the evils of running sand, which, if not attended to, accumulates in the bottom of a sewer, cakes with the sewage matter, and obstructs the flow. Perhaps some may think that it would be better to keep the flow of subsoil water entirely separate from the sewage by continuing the drains through or round all of the manholes with provision for admitting the subsoil water into the sewers whenever required for flushing. Special cases undoubtedly require special treatment, and in the case of wet gravelly ground it may sometimes be an advantage when using the subsoil drains to carry out a separate system; but in running sand the case is different, for without a certain number of sump-holes the drains would infallibly get choked, and to fit the subsoil drains with separate manholes and sump-holes would unnecessarily complicate the sewerage works, besides introducing other evils. As a rule, we are in favour of introducing subsoil water into sewers, as a constant flow tends to sanitary efficiency; but where the sewage is to be used for irrigation it may in some cases render it difficult to dispose of the whole of the sewage, especially where pumping has to be resorted to. There are, however, to our minds so many objections to a separate system that we should not adopt one except for very special reasons. None can lay down rules and formulæ for inflexible guidance in engineering matters; all that can be done is to state principles, and the intelligence of the engineer must be his guide in their application. Though primarily the object sought in the invention of the subsoil drain and pipe rest was the more perfect construction of the sewer proper, it possesses the additional merit of reducing the permanent level of the subsoil water to a lower level than does the ordinary sewer, and is a distinct provision for that object instead of an accidental accompaniment of sewerage works.

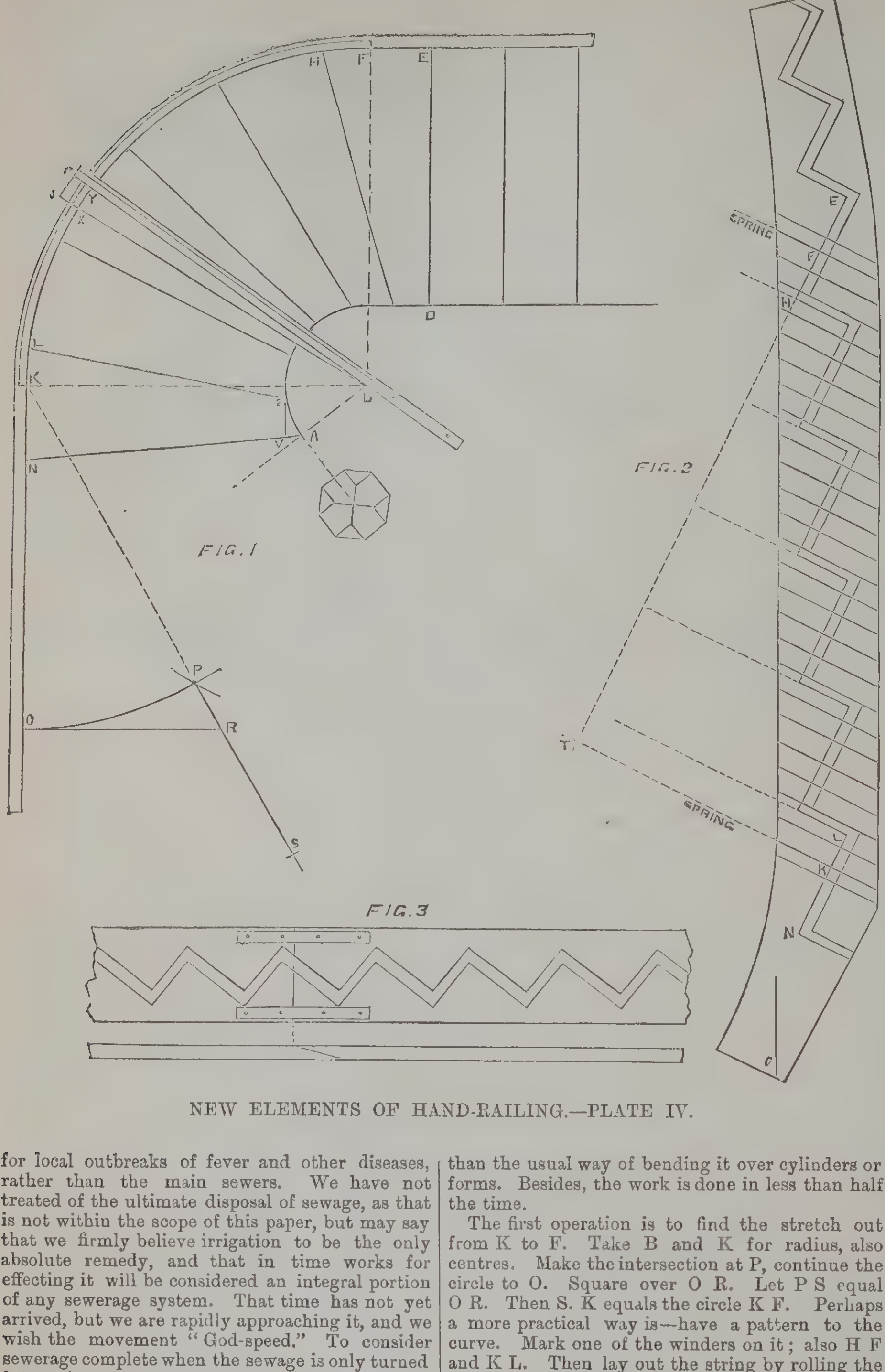
---

* British Association, Section G.

Brick sewers it is common to construct with invert blocks when the subsoil is wet, and they make a very true foundation to build the sewer upon. In running sand we find it very much better to construct the inverts with flanges as shown, and to bed them in clay as a precautionary measure for keeping the sand out of the sewer. After the sewer is completed it is unnecessary to keep the invert drain open, as the brick sewer being porous admits the subsoil water and effectually drains the ground. During the construction of the sewer the invert blocks act as subsoil drains, and very much facilitate the work. The experiments we have already made with the subsoil drains have thoroughly satisfied us as to their efficiency. We find that when they are laid the sewer can be constructed with extreme facility with perfect joints, and that the effect of the sewer pipes breaking joint with the sub-drains is not only to strengthen the sewer at the joints and prevent drawing, but to ensure perfection in the gradients. The subsoil drains are, in fact, a foundation for the pipes of the sewer, and the sewer itself can be as readily constructed upon them as if the ground were perfectly dry. Those who have had experience in running sand will see that this is no small advantage, independently of the draining of the subsoil which will necessarily occur. We have begun to use the subsoil drains or "blocks," as the workmen already call them, in the sewerage works we are carrying out at Birkdale, and when by their aid we get the 10,000 yards of intended pipe sewers completed, we shall be in a position to state the results, and to give further information to any engineers who may ask for it.

For all sewers flushing is of the utmost importance, yet how seldom is any provision made for it except by the introduction of a water company's hose which combines the minimum of effect with the maximum expenditure of water. In all our works we introduce flushing valves of the forms shown in the engraving, but for sewers in sandy districts they should be used at more frequent intervals, for unless we have abundance of scouring force we are never safe as to the permanence of the sewer. Frequent flushing is of the utmost importance; it is of no use making elaborate provisions that cannot be used when most wanted, or letting apparatus rust for want of efficiency in the executive. Local boards too often think they have done everything when a sewerage system has been carried out; that it should be constantly attended to is of almost equal importance. No apparatus can dispense with intelligent supervision, but we cannot speak too strongly on this point, for, although it is a truism, local authorities act as if everything were self-acting, and only examine a sewer when it is time to pull it up. Unfortunately, engineers are partly responsible for this state of things, for their works formerly were, from the absence of provision for flushing, apparently constructed on the same supposition. Flushing gates for large sewers are frequently used, but we are not aware of valves being used by others than ourselves for flushing pipes with their own waters. That all sewers should be flushed with their own waters should be an axiom of engineering, for otherwise in drought, when water is scarce, and the deleterious decomposing matters which invariably accumulate in the best constructed tributary sewers most require removing, they stand a good chance of being left to breed fevers and other diseases. By having the valve, consisting of a cylindrical barrel, of the diameter of the pipe it is connected with, built into the manhole, and fitted with a flap valve hung to a diagonal face with a brass pin in the hinge, the water accumulates up the sewer until it rises to the safety overflow, which should be below the level of any adjoining cellars. When this occurs, sufficient hydraulic power is accumulated to sweep all deposits out of the sewer below to the next valve. It must be understood that the sewer above the valve for a certain distance also shares in the cleansing operation; but the force is greatest near the valve, and it decreases until it reaches a distance sufficient for the whole of the water to get into "tram," when the scouring force is equalised, though much diminished. We have used these valves in all our works for the last five years, and find them invaluable. They, in fact, render that possible which would otherwise be impossible. We use them up to 2ft. diameter, but for the larger sizes a small portable crab winch, shown also in the engraving, capable of lifting one ton, and which fits on the manhole cover, and to the barrel of which the chain of the valve is temporarily attached, is employed to lift them. For brick sewers and sewers of a larger diameter, the flushing-gate manufactured by Mr. Samuel Harrison, of Soho Foundry, Liverpool, is used. When not in use it lies back against the side of the manhole, and is held in its place by a catch. When closed and screwed up by the handscrews, the water accumulates behind and keeps it tight against its face until reaching the overflow. On to this gate is fixed a circular valve near the invert of the sewer, precisely similar to that described for the pipes, and when it is required to flush the sewer it is suddenly lifted, a rush of water takes place along the invert and sweeps all before it. When all has escaped the gate can be thrown back readily, as it is relieved from all pressure. The flow of water being directed to the invert is more effectual than it would be were the gate itself opened, and the flushing force being applied through a smaller orifice lasts longer and is more sustained. The great advantage, however, is that a very large sewer can thus be flushed without any of the mechanical aids necessary for opening a large flushing gate against pressure, and consequently the cost of the gate is not half that of the ordinary sluice. At the termination of all the sewers we provide a flushing-box and pipe for filling the upper part of the sewer above the first valve, as the natural flow is there, of course, only small. The gullies we use are easily cleaned of sand, and have the advantage of remaining trapped during great drought, as 5in. of water must evaporate before the untrapping takes place.

The form of ventilator also manufactured by Mr. Harrison, of Liverpool, though applicable to all situations, is especially so for districts where either much loose sand is blown about, or where there is a heavy traffic and consequently muddy roads. The ordinary form, consisting of a brick chamber and separate ventilating grid, under such circumstances soon gets choked with mud or sand, and the consequent damp also destroys the efficiency of the charcoal. In all sanitary works, as we before said, we must have efficient superintendence, and the best method of making that superintendence efficient is to make the work easy and light. It will be seen that the ventilator consists of a combined manhole and ventilating cover. The air grid is in the manhole cover itself, the frame which it fits into being lengthened into an air shaft which is perforated at the side, and the bottom is sealed with the movable mud basket, to prevent any passage of air from inside to outside except through the deodorising charcoal basket. It will be seen that during a heavy fall of rain, or should the cover accidentally be fixed lower than the road and surface water enter, the water may overflow the mud basket. To avoid damping the charcoal, this is provided for by the overflow pipe, which is carried down into the water of the sump-hole, which traps it and prevents it becoming a channel of communication between the internal gases and the external air. A small brick chamber or flue is built at the side, covered with a cast-iron plate to receive the paving. The mouth of this in the manhole is fitted with an iron frame to receive the charcoal basket, and the upper part communicating with the perforations in the side of the shaft of manhole cover, and thence with the external air. It is evident from this arrangement that the mud basket can be readily lifted out by its handles and emptied of its contents, and also that no inspection of the sewer can take place without this preliminary operation being guaranteed. We have now described pretty fully our arrangements for sewering wet sandy ground. Many of these inventions we use also in other places, but the original suggestions for them have arisen from our contentions with sand. In other subsoils, with quick gradients, we only use sump-holes in those manholes where the valves are fixed, carrying the sewer through the intermediate manholes by open culverts constructed in brick, of the form of the sewer, and, in fact, forming the bottom of the manhole, with a shoulder on each side. Undoubtedly the most efficient system of sewerage is that which sweeps all matter away at once to the outlet, and sump-holes should only be used to prevent the possible choking of the sewers. The conditions of perfect sewerage may be summed up thus:—True gradients, as quick as can be obtained, but increasing gradually from the outlet to the branch sewers; perfect construction; requisite depth below the surface; provision for draining the subsoil water to the level of the sewers; adequate flow of water in the sewers; abundance of flushing power; constant flushing and sufficient ventilation; and real active supervision in the executive. But above and beyond that, the abolition of cesspools, middens, and stagnant pools, together with a perfect house drainage, are essential. Often when sewerage works are completed the whole of their utility in a sanitary point of view is vitiated by criminal neglect of the house drainage. It is not merely sufficient to connect existing drains or the overflows of cesspools with the sewers; they should be thoroughly examined, abolished, and the drainage reconstructed where necessary. We have no doubt that defective house drainage is in most cases responsible



NEW ELEMENTS OF HAND-RAILING.—PLATE IV.

for local outbreaks of fever and other diseases, rather than the main sewers. We have not treated of the ultimate disposal of sewage, as that is not within the scope of this paper, but may say that we firmly believe irrigation to be the only absolute remedy, and that in time works for effecting it will be considered an integral portion of any sewerage system. That time has not yet arrived, but we are rapidly approaching it, and we wish the movement "God-speed." To consider sewerage complete when the sewage is only turned into a river, or on to a shore, is a barbarity unworthy of the age, and it is the duty of Government, and also we hope its intention, to absolutely prohibit the fouling of the watercourses and shores, and so force the question on to its only logical conclusion.

◆

NEW ELEMENTS OF HAND-RAILING.

(*Continued from page* 222.)

Plate 4.—To Lay Out the Winders for Quarter-circle Stairs—The Wall-string Bent by Kerfing.

Figure 1. Commence with the right angle B K F. Take B for centre and draw face of cylinder, also the wall string. Determine width on narrow end of winders, say 5½in. Let V N be the face of first riser starting. Fix on number of winders, say six. Let V 2 measure 5½in. Set off, from 2 on the circle, five spaces to equal V 2. Square over D E. Next divide E N into six equal parts. Draw face of risers. This completes the position of winders on the plan.

The centre of Newel stands on A.

The next consideration is the circular wall-string which is bent by kerfing; a much better method than the usual way of bending it over cylinders or forms. Besides, the work is done in less than half the time.

The first operation is to find the stretch out from K to F. Take B and K for radius, also centres. Make the intersection at P, continue the circle to O. Square over O R. Let P S equal O R. Then S. K equals the circle K F. Perhaps a more practical way is—have a pattern to the curve. Mark one of the winders on it; also H F and K L. Then lay out the string by rolling the pattern, by which means you are unfolding the curve.

Fig. 2 shows the string laid out and cut in for steps and risers before bending.

The line T F is the stretch out. Lay off the spaces to equal X Y on the circle. Make a pattern, of parallel width, to equal X Y, the solid wood between the kerfs. Begin at the middle of the stretch out. Make a cut. Mark with pattern on each side of it. So continue, right and left, until the required number of spaces given to T and F are complete. The string will now bend between the quarter-circle and all the cuts close. The piece of solid wood beyond each spring-line is equal to half the number of kerfs. In other words, the last cut will pass the spring-lines, showing more or less solid wood, according to thickness of the saw. The letters H, F, E, on the upper end, correspond with those on plan, and show the position of risers on the string. Then K L, on the lower end, also agrees with K L on plan. Some workmen build the stairs in the shop; in which case the string is ready when kerfed. Others prefer to fix the strings and carriages in the building, in which case the circular wall-string is bent and secured with a brace. But, if the finish be walnut, oak, or other wood, have a veneer of the same. Lay out steps and risers; prick through for those of the kerfed string, which cut; avoiding those on the veneer until bent and glued.

Fig. 3. Splicing. Stuff can seldom be obtained sufficiently long to have the string reach from story to story. It has to be made in two pieces by splicing, and there is no better way than here shown; it being a long splice, the joint glued. Lay on a couple of strips, fasten with screws, removing the upper one when the string is fixed.

(*To be continued.*)

◆

STRASBURG CATHEDRAL.

THE Cathedral of Strasburg, of which we this week give an illustration, possesses in itself elements of lasting interest to all lovers of art. Present circumstances, however, lend an additional importance to any particulars of the grand temple which has so long been the boast and glory of Alsace. While our illustration was preparing it seemed only too likely that its value would be enhanced by its becoming one of a few priceless art treasures that had been sacrificed to the war spirit. The fearful siege has, however, at last ended, and with comparatively little damage to the Cathedral. The roof of the nave is burned and the windows are pierced with shot, yet the interior is almost entire. The astronomical clock is untouched; a shell had passed through the window immediately above it. The spire was struck in several places.

Strasburg Cathedral, dedicated to the Virgin, though ranking next to that of Cologne, is considerably smaller, covering little more than 60,000 square feet of ground. The whole of the eastern part dates from the eleventh and twelfth centuries, and formed part of an old basilica of little beauty or size. The nave added to it renders its appearance still more insignificant. This nave, which, together with the west front, possesses all the beauties, as well as the defects of the German style, was probably commenced by Bishop Werner in the early half of the thirteenth century. Its erection has been ascribed by the Germans to Erwin von Steinbach, but it is more than doubtful whether he really was the architect of the nave. "What he really did do," says Mr. Fergusson, "was to commence the western façade, of which he laid the foundation in 1277, and superintended its erection till his death, forty-one years afterwards, when he was succeeded by his sons, who carried it up to the platform in 1365."

The design of the nave is bold, and the details pure. The central aisle is 55ft. wide from centre to centre of piers, and the side aisles 33ft. The height is 101ft. only, which, as the length is only 250ft., is considerably in favour of the appearance of the interior.

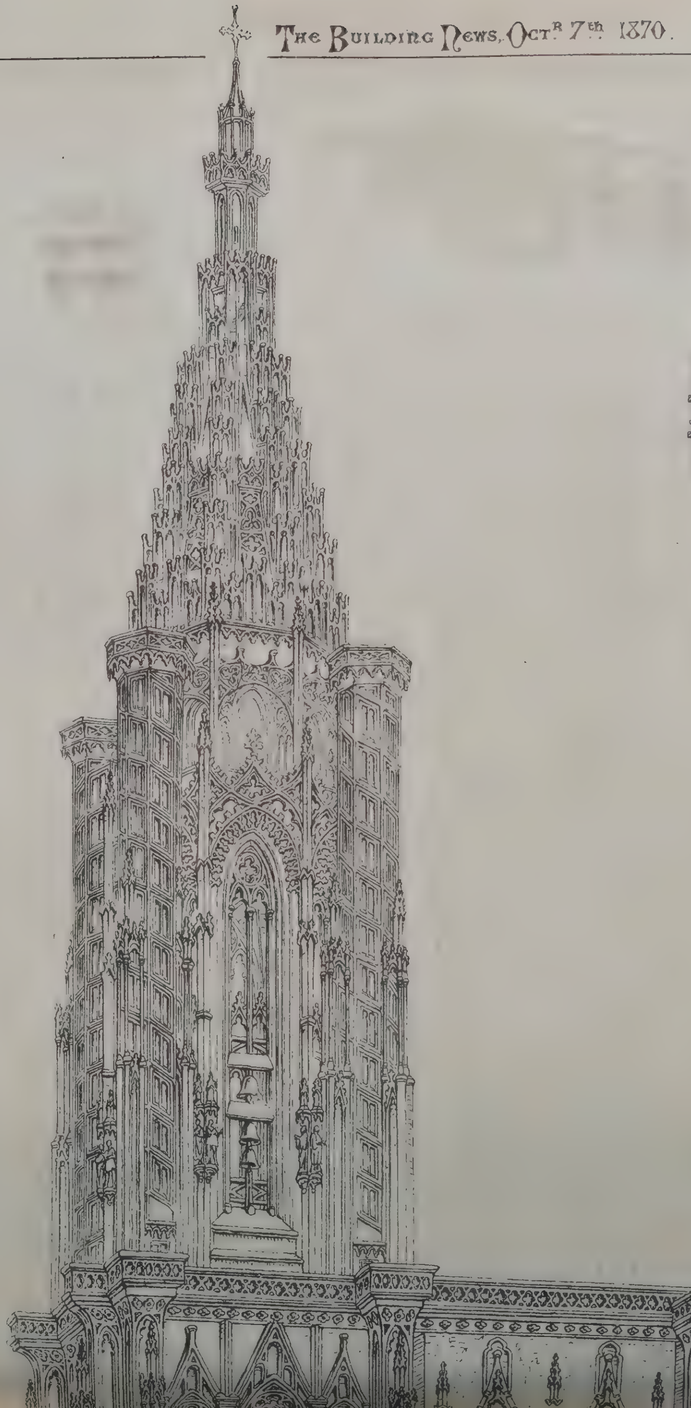
The western façade is much too large for the church, and although imposing from its mass and fascinating from its richness, shows throughout a want of artistic feeling and feebleness of detail. The defect of putting a second line of unsymmetrical tracery in front of the windows is particularly noticed by Fergusson and others, together with the spreading of the tracery over the neighbouring walls. The façade is divided into three compartments, the northernmost being surmounted by a tower and spire, having at each of the four corners of the tower spiral staircases enclosed in open work. This tower was finished by John Hültz in 1439. The spire rises to a height of 468ft. The octagonal part is tall and weak in outline; the form of the spire is ungraceful, and the tracery with which it is covered unmeaning and constructively useless.

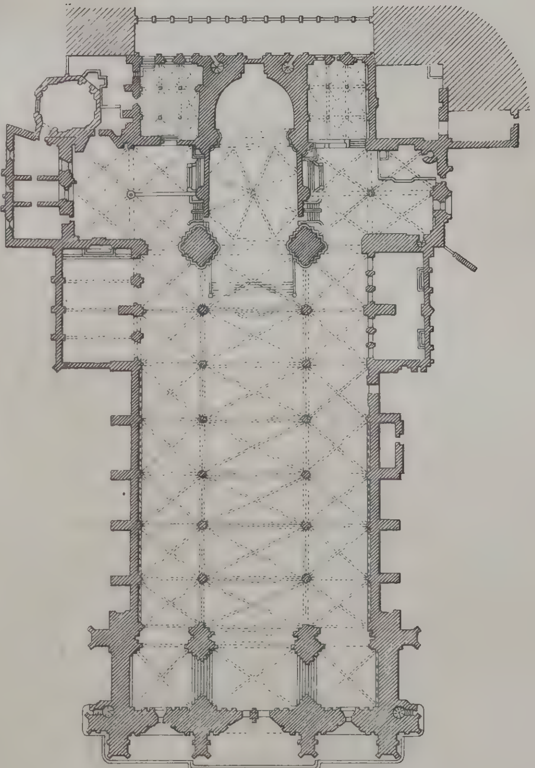
The Cathedral probably suffered far more from its French owners during the Revolution than it has done during the late siege. In the mad fury which sprang up against everything ecclesiastical, no less than 235 statues were taken down from different parts of the building; only 65 of these have been preserved.

◆

Charles Dickens's Tombstone.—Within the last few days the plain and simple inscription on the tombstone over Charles Dickens's grave in Westminster Abbey has been exposed to view, and, strictly carrying out the injunctions contained in the deceased's will, it bears the following simple inscription:—"Charles Dickens, born 7th February, 1812; died 9th June, 1870." The letters are in brass, sunk into the stone.

The Building News, Oct^R 7th 1870.





PLAN OF STRASBURG CATHEDRAL.
SCALE 100 FT TO 1 IN.

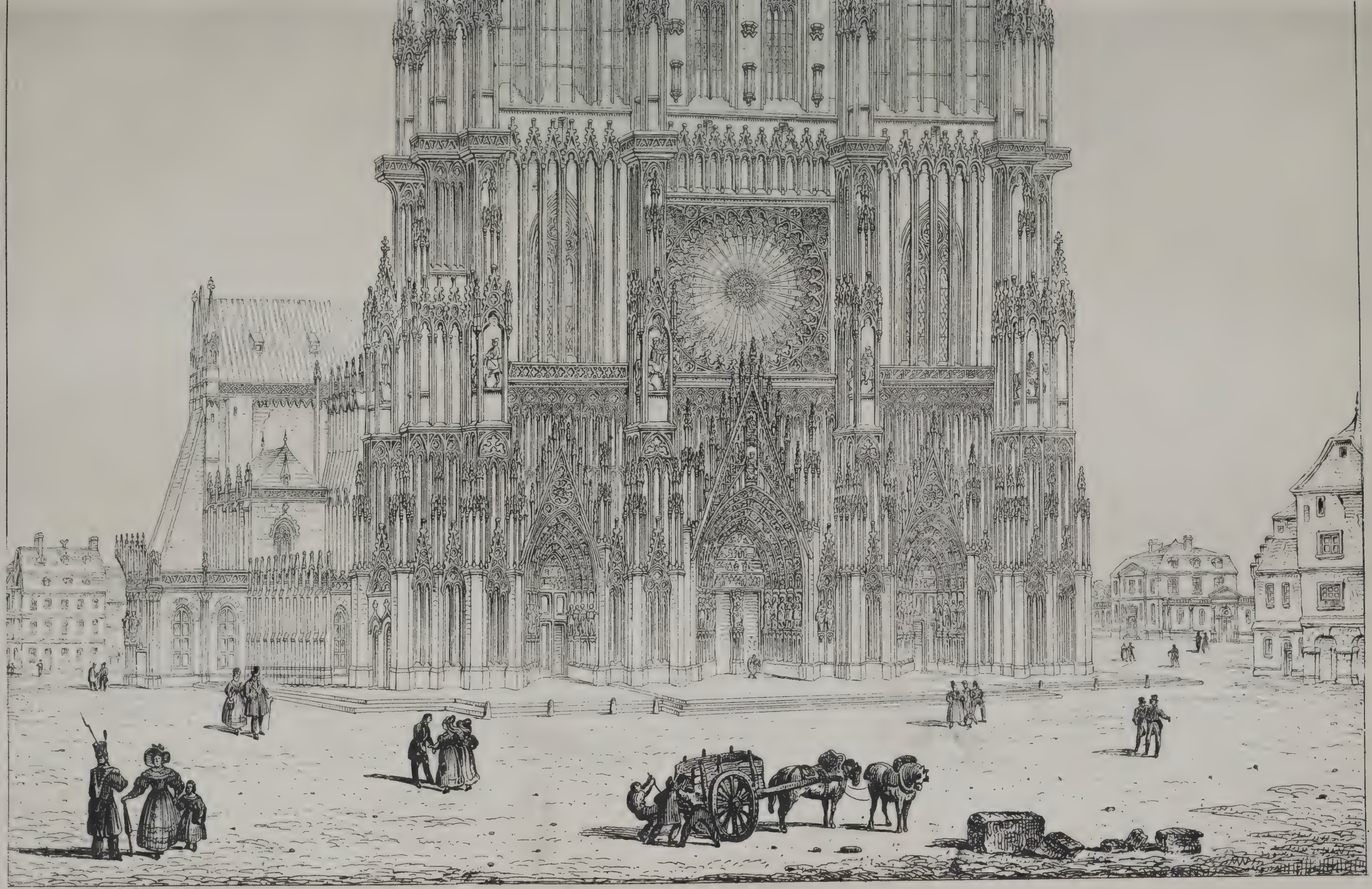


Photo Lithographed by Waterlow & Sons London

Cathedral-Strasburg

Furniture & Decoration.

THE THEORY AND PRACTICE OF MODERN HOUSE PAINTING AND DECORATION.

By "An Experienced Workman."

(*Continued from page* 191.)

DISTEMPER.

IN finishing ceilings or walls in distemper colour various little matters are to be attended to, as mixing the colour, and laying it on the work so as to secure a good job ; for it will often happen that after every precaution and every care has been taken in the preparatory processes, the work will turn out bad. This may arise, and often does, from the colour being improperly or insufficiently mixed. Another great cause of failure is the inequality of surface, owing to the colour being unequally spread. In order to produce good work two things are essentially necessary in the mixing of the distemper, namely, clean and well-washed whiting and pure jellied size. The whiting should be put to soak with sufficient soft water to cover it well and penetrate its bulk. When the whiting is sufficiently soaked the water should be poured off, which will remove any dust or foreign matter from the whiting. It should then be beaten up or stirred until all the lumps are broken and it becomes a stiff smooth paste. A good workman will do this carefully with the hand, and will manipulate it until it is quote smooth, but it may be done most effectually with a broad stick or spatula, and then strained through a metal or other strainer. The size should now be added, and the two lightly but effectually mixed together. Care should be taken not to break the jelly of the size any more than can be avoided, and this may be best done by gently stirring the mixture with the hand. If the jellied state is retained intact the colour will work cool and lay on smooth and level. The size, whether made of parchment clippings, glue, or any other material, should be dissolved in a sufficient quantity of water to form a weak jelly when cold. In practice, we find that distemper mixed with jellied size will lay on better and make a better job than when the size is used hot. Colour mixed on the former plan works cool and floats nicely, while the latter works dry, and drags and gathers, thus making a rough ceiling or wall ; and the difference in the labour required is very much in favour of the jelly size. A little alum added to the distemper has a good effect in hardening, and helps it to dry out solid and even. When milk is used as a vehicle for distemper, the skim milk or buttermilk should be used. The whiting should be broken up in as little water as possible consistently with its being properly dissolved or slaked ; the milk may then be added in sufficient quantity to thin the whiting to a working consistency. This working consistency will, of course, vary, and no positive rule or proportions can be laid down, as it will happen that what would be the right proportion or thickness for one ceiling or wall may not be so for another. The state of the atmosphere will also affect the question, as it will be evident that there will be a great difference in the working of distemper colour on fine dry days and on damp muggy days, and therefore much must be left to the judgment of the workman. But it may be accepted as a fact, true under all circumstances, that the sooner distemper colour dries after it is laid on the work the more likely it is to turn out well. The best plan to follow in distempering a room or a ceiling is to close the windows and doors, and stop the free circulation of the air as much as possible while the distemper colour is being laid on. This prevents its drying too quickly, and enables the workman to lay the colour on more evenly, and with less danger of showing any piecings; but the moment that the wall or ceiling is covered the windows and doors should be thrown wide open, and as much fresh dry air admitted as possible. This free circulation of air absorbs and carries off the moisture from the walls. The evaporation is quick, and a good job results, for it is a fact, which we do not attempt to account for here, and in fact we could not if we would, that if distemper (technically speaking) hangs long in drying, or, in other words, does not dry quickly, it becomes discoloured and shady. In laying on distemper colour on walls and ceilings one great point to be attained is, of course, a level and uniform surface when dry, and this desirable result can only be obtained by the colour being laid on of a proper consistency and by being laid evenly. Some workmen make a practice of laying off the colour on a ceiling across the light in straight even lines; others, again, are in favour of laying off in the direction of the light—*i. e.*, in the direction of the windows of a room, as they thereby avoid any shadow ; but in practice we find it best to lay off the colour on ceilings in any and every direction, so that it is laid off and spread evenly and level, having no more colour in one place than in another. And this may be done easily if the workman, after having put a sufficient quantity of colour upon the ceiling, will spread it well, and then lay off gently with the ends of the bristles of his brush ; and herein lies or consists the difference between one workman and another. One will lay off the colour so lightly and, consequently, evenly, that there will be no hair of his brush seen ; while another workman who may be assisting him will use his brush with a heavy scraping motion in laying off, consequently his portion of the ceiling or wall will look streaky, or show light and dark lines and every mark of the brush, while his fellow workman's portion will look solid and in tone ; therefore it follows that no large surface can be coloured in distemper with a thoroughly successful result except the workmen endeavour to avoid the streaky scraping action in finishing described above. Another point requiring attention is the necessity for laying on the work an equality of colour. Some men work with a liberal and full brush, while others seem to be trying with how little colour they can do the work, and consequently there results two different surfaces of unequal solidity. Another cause of this inequality is the fact that while one man will lay on a breadth of colour and will spread it and finish it in a little time, and with little labour, another will keep on working at it until the colour begins to set and dry at the edges, and so the work is spoiled ; consequently it follows, in view of the foregoing facts, that in a successful job of distemper work the colour must be spread evenly and equally, and laid off with an even and equal pressure on the entire surface.

There is an extensive and varied range of colours which may be used in tinting distemper, and there are also certain colours which may not be used under special circumstances. Chrome yellows, or any greens which are made from chromes or have chrome in combination, cannot be used in any case when lime is present, as the lime destroys the green, or rather the chrome it contains. New walls require a coat of paint to neutralise the effect of the lime in the plaster before any of these colours can be used with safety; but we need not go to that expense and trouble if we will be content to discard bright greens. Any of the bright clear ochres mixed with lime blue make a variety of shades of green of a mild sober hue, and much pleasanter to the eye than the bright chrome greens ; for with the latter there is a glare and a want of repose when used in large masses which is very offensive to good taste, while the former have a quiet richness which is seldom or ever out of harmony with anything which may be placed in contrast with it. By adding Indian red or black to these greens we may produce an endless variety of suitable tints for wall colouring, and all these colours made from ochre, lime blue, and Indian red will stand or keep the colour on new walls or in contact with lime. A great variety of tints for distemper work may be made from Indian red and ochre with black added, stone colours and drabs of all shades and hues, all of them permanent colours ; all these colours will, of course, be bright or warm as the yellow or red preponderates. It will sometimes happen in working distemper colours that all our calculations are set at nought by some peculiar property or chemical matter contained in the mortar or plaster with which the wall is done ; or in some parts of the wall the colour will fade in patches, and this, as we have before said, must arise from some chemical substance or matter, which has either got accidentally into the plaster, or forms a portion of the sand used. However, whatever the cause may be, the fact is patent and one of very common occurrence. In these cases we have found that the only safe and effectual cure is to give the wall a coat of paint, or a coat of patent knotting. Sometimes the bricks, or a few bricks in a wall, will cause a stain of their own size to appear through and on the face of the plaster. We have often seen these discolour and penetrate through a painted wall ; in these cases two or three coats of knotting should be used. In finishing cornices or enriched plaster work, we have found in practice, where the work has to be coloured in tints, that the best plan is to prepare it as before described, and then wash over with a thin coat of pure white well bound with size ; upon this we lay our tints. We thus obtain a pure groundwork, and those parts which are to be left white are much purer and better than if they were put in singly. We are also enabled to cut in the various tints with a much clearer and sharper edge on this plan, whereas if we put the tints on the preparations without whitening first, we get into difficulties at once, inasmuch as it is not possible to cut in the white and the other tints near so sharp, and they will of necessity not be so pure.

We have just received a communication from a friend of large experience in these matters, who informs us that he has made a practice of preparing ornamental plaster work for distempering with milk alone, and has found that method very successful in preserving the sharpness of the ornament. He gives the work one or two coats of pure milk as a preparation—this stops the suction ; he then mixes his colours with milk, and picks in the enrichments, and he tells us he has found it to answer admirably, as he is able to paint the finest enrichments with a clearness and sharpness of outline almost equal to oil paint. It may be stated here that when any backgrounds or interstices between ornament or enrichments have to be painted in of a different colour in distemper, they should be done before the ornament is coloured, and the workman should carry a wet sponge with him to wipe off any colour which may have got on the face of the ornament. A can of clean water, a sponge, and a little care and trouble will save much of the labour, and will assist to make a clean sharp job at the finish. In distempering walls we have known cases in which we have been compelled to use lime instead of whiting, an instance of which has very recently come under our notice. In this case, which was a very large staircase wall, every precaution had been taken, the best of everything in the way of material was used, and skilled labour of the best kind, yet the work turned out bad ; it was washed off, re-prepared, and again coloured, and still the result was the same. At last it was suggested that lime should be used instead of the whiting, and the result was that it turned out as good a job of distemper as we ever had the pleasure of seeing, solid and even in tone as a piece of paper. Now here was a case in which the chemical properties of the plaster were utterly antagonistic to the use of whiting and the usual processes. Difficulties of this kind often occur in practice, and go to prove that no decided laws or rules can be laid down which will be applicable under all circumstances, and that much must be left to the judgment and experience of the decorator. Ceilings will often require to be cleaned up or re-whitened for a temporary purpose, and for which it is not worth while or there may not be time to wash them off and prepare them in the usual manner. In these cases we have always found it the best plan first to brush off all the dust, and then to damp the ceiling over with pure water, and while it is damp to follow on with a thin coat of whiting and size, stained or tinted to the proper tint required, or rather with which it was originally done. This will be found an excellent and in fact the best plan for clearing up temporarily, being quickly done and at small cost. Of course this can only be done once, as it tends to fill up and cause an accumulation of whiting and size, which chips and blisters if done too often, and we do not recommend it except under special circumstances.

◆

ARCHITECTURAL DRAWINGS BY MR. BURGES.

MR. BURGES, of 15, Buckingham-street, Strand, is about to publish a work under this heading. It will consist of drawings made in France and Italy, measured and plotted on the spot. The selection consists principally of details, inasmuch as many of the buildings themselves have been illustrated in the excellent works of Messrs. Nesfield & Shaw, and occasionally in the Building News. The work will consist of seventy-five folio sheets, accompanied by an adequate amount of letterpress describing the various points of interest connected with the drawings. The work was commenced in 1864, and discontinued in 1865 in consequence of the gentleman who was drawing the plates (Mr. W. S. Barber) leaving London. The work was resumed last year, the remaining portion of the plates having been executed by Messrs. Tarver and Lonsdale. We are informed that no more copies will be issued than those required for the use of subscribers. The reputation and ability of the author are a sufficient guarantee that the work will be a valuable one.

◆

ROYAL INSTITUTE OF BRITISH ARCHITECTS.—VOLUNTARY ARCHITECTURAL EXAMINATION.

THE following is the list of passed candidates :—

Class of Distinction.—1864, R. Phene Spiers, Associate, London ; R. R. Bayne, Westminster ; 1866, T. H. Watson, Associate, London.

Class of Proficiency.—1863, D. E. Gostling, London ; R. O. Harris, London ; G. T. Redmayne, Manchester ; L. W. Ridge, London ; R. Phene Spiers, Associate, London ; H. Stone, Temporary Student, London ; T. H. Watson, Associate, London ; E. Wimbridge, London ; 1864, H. J. Austin, Gateshead ; R. R. Bayne, Westminster ; W. B. Gough, Bristol ; C. Hadfield, Associate, Sheffield ; R. C. James, London ; A. Jowers, London ; M. H. Linklater, Belfast ; 1866, J. S. Edmeston, London ; F. Hunt, Temporary Student, London ; R. S. Wilkinson, Temporary Student, South Penge Park, S.E. ; T. Wonnacott, Farnham, Surrey; 1870, T. E. Mundy, Tottenham ; J. S. Quilter, Associate, London ; W. Scott, Northampton ; W. L. Spiers, London.

Preliminary Class.—1870, J. B. Cohen, London ; T. Garratt, Northampton ; T. J. Street, Guildford.

◆

METROPOLITAN BUILDING ACT, 1855.

Arches under Public Ways.

DISTRICT Surveyor's Fees.—Mr. William Wigmore, of Bradfield House, Walham Green, builder, was summoned before Sir Robert W. Carden, at the Guildhall Justice Room, for £25 10s., for District Surveyor's fees for the building of certain arches under the public way in Newgate Market, for the Corporation of the City of London. Mr. C. H. Clarke appeared for the District Surveyor, and another solicitor for the defendant.

Mr. Edward Power, the District Surveyor for the southern division of the City of London, said he was the surveyor for the district which included old Newgate Market. On the 8th of June he received a notice from the defendant that he intended to build 52 arches under a public highway in old Newgate Market. He went there on the 12th of June, and measured and surveyed them. About ten or twelve days afterwards he found one or two arches complete. By the 20th of July, 51 arches were complete, and in the interim he went fifteen or sixteen times to survey them, as they were in progress, and had to measure them from time to time to see that the walls were of a proper thickness, the arches of a proper width or span, and constructed in accordance with the Act of Parliament. The arches varied in size, and he had to examine every one separately and measure them. They were not arches attached to houses, but were built on a vacant piece of ground, under what was a public way, and adjoining which houses, he understood, were intended to be built. Each arch or vault had a separate entrance from without, and divisional party walls.

Cross-examined.—Each vault or arch was a separate structure, and one arch was turned at a time. He had claimed his fees (£25 10s.), and the defendant had refused to pay them.

For the plaintiff it was contended that each arch was a separate structure, and entitled him to a fee of 10s. on each, the attention of the Justice being directed especially to the wording of the 25th section, which recognises the distinct nature of the service to be performed by the district surveyor ; and it was also contended that although the wording of the second schedule, which includes the amount of fees to be charged under the Act, is somewhat obscure, yet the natural meaning of the language employed contemplates a multitude of "arches" and a multitude of "public ways," and must inferentially mean also *one* "arch" under *one* "public way," the other argument being so unjust as to carry with it its own refutation. It was also forcibly pointed out by Mr. Clarke that each vault was really a separate building under the Act, and had Mr. Power elected to have viewed them as such he would have been entitled to a fee of 10s. on each. This was referred to in order to show the Alderman that a fee of 10s. on each vault was not an excessive sum, regard being had to the nature of the work and its responsibility.

For the defence it was argued that they were one continuous structure, requiring only a fee of 10s. on the whole.

Sir Robert W. Carden said that while £25 10s. was too much to pay for surveyor's fees, he thought 10s. was too small; but taking the Act of Parliament as it stood, he could only order one fee of 10s. to be paid for the whole of the arches.

Mr. Clarke then asked for a case to go to a superior court ; and it was agreed that as the case was one of much importance to district surveyors and builders, a rule should be agreed upon to get the decision of a superior court upon it.

◆

RUSKIN'S LECTURES ON ART.*

By Stopford A. Brooke.

(From *Macmillan's Magazine* for Oct. 1870.)

THERE are few men of our time who have been more largely praised or more bitterly attacked than Mr. Ruskin. There are none who have deserved more praise or more resolutely challenged attack. He has been so lavish in his approbation of certain artists and schools of art, that he has raised against them a cloud of opponents. He has been so unsparing in blame of certain others, so curiously inventive of terms of reproach, so audacious in his tilting against received opinions, and so felicitous sometimes in his hits, that he has forced into combination against him a number of determined foes. Of all men he should be the last to object to criticism, for his own sword seldom seeks the scabbard. And on the whole, though he professes with a certain archness a desire for peace, nothing gives him so much pleasure, or brings out his intellect so well, as war, when it is on a subject with which he is acquainted. He will run on, giving birth to paradox after paradox in an apparently gloomy manner, choosing for very wilfulness the obscurity of the Pythoness, as long as his listeners sit rapt and receptive at his feet. But the moment one of them, seeing that the paradoxes are becoming intolerable, starts up and meets them with a blunt contradiction, and declares war, Mr. Ruskin becomes radiant with good humour, his intellect becomes incisive, and he rushes to the fight with joy. Nothing is worse for him than worship ; and if he had had less of it, he would have done the State more service. Half of his morbid and hopeless writing comes directly of this—that he has not been of late sufficiently excited by respectful opposition to feel happy.

It may be said that he has had plenty of opposition of late, but it is not the sort which makes a man draw his sword with pride. Since he has devoted himself to economical and political subjects, the criticism he has met has been a criticism of laughter from his enemies and of dismay from his friends. It has been felt impossible to go seriously into battle against him, for his army of opinions are such stuff as dreams are made of, and their little life is rounded with a sleep. Throw upon them a clear light, and they disperse—

> "The earth hath bubbles, as the water has,
> And these are of them. Whither have they vanished ?"

We cannot say with Macbeth, "Would they had stayed ;" but when we look back on the extraordinary series of proposals for regenerating the country, and remember the criminal classes set to draw canal boats under the lash, and the poor dressed all in one sad-coloured costume, and other things of this character, we may follow with Banquo's words,

> "Were such things here as we do speak about ?
> Or have we eaten on the insane root
> Which takes the reason prisoner ?"

In this way he has brought upon himself the loss of the impulse he derives from respectful and vigorous war. He has left the Delectable Mountains where he fed his sheep, and gone back to the valley of the shadow of death. There, impressed with the withered image of Carlylism, which having surrendered hope sits now like giant Pope shaking its hands at the pilgrims of the world, and unable to do more than mutter curses at Liberalism, and invoke the help of the aristocracy to sanctify and redeem the people : enthralled by this phantom of a past glory, he has found it almost impossible to go on drawing, with the peace necessary for an artist, the tombs of Verona, or to note down the fleeting loveliness of a sunset cloud. While the poor were perishing for want of fresh water and decent houses, he seemed to himself, we conjecture, to be like Nero, fiddling while Rome was burning. So he abandoned his own sphere—in which, whatever may be his faults, he was supreme by genius—to follow, *haud passibus æquis*, in the track of our Jeremiah, whose style is open to the same charge which Mr. Arnold makes so pathetically against the Jewish prophet. But the prophetic cry does not suit the gentler temper of Mr. Ruskin. With all his efforts we are thankful to say that he cannot arrive at making the uncouth noise which Carlyle made, and the uncouthness of which gave what he said more than half its force. He is too tender-hearted to curse heartily, and he cannot bear, like his prototype, to pour forth torrents of blame without proposing remedies for evils. But the remedies Ruskin has proposed are unpractical at this time and in this country, owing to his ignorance of the state of the poor. No man is less fitted to understand their true position. He is too sensitive to beauty, to cleanliness, to quietude, not to exaggerate the apparent misery of a life passed in the midst of ugliness, dirt, and noise. He thinks all the poor feel these things nearly as much as he does, and he cannot conceive, as we see from these lectures, that they should endure to live. We should suppose that he has never lived among them, nor seen how things among them are seasoned by custom. Those who have gone from room to room in the courts which Ruskin thinks so unendurable know that there is, on the whole, as much happiness among them as there is among the upper classes ; that there is more self-sacrifice, more of the peace of hard work, more good humour, more faithfulness to others in misfortune, more everyday righteousness. Their chief evils are drunkenness, which has only lately vanished from among the upper classes ; the torrent of alms which has been poured upon them, and which has drowned their independence and postponed their learning the lesson of prudence as opposed to their reckless extravagance. Their main wants are a really active sanitary board, directed by gentlemen in the cities and provinces, who will see that the common work is done with common honesty: and education, especially education in physical science. The commonest training in the first principles of physiology and chemistry, given accurately, will soon produce that state of active anger at their condition, and determination to have it rectified, which no State interference can give them, and which State interference sends to sleep. True, Ruskin advocates this kind of education, and has advocated it well; but he has done it as part of an elaborate system of direction by the State and by the upper classes—direction which would be as evil to its victims as Romish direction is to the moral force of its patients. No nation has ever been saved by foreign help: the poor can never be saved by the action of the rich, only by their native exertion, and everything that Ruskin says on the subject, in these lectures and elsewhere, is open to this most grave objection, that it takes away from the people the education which is gained by personal mistakes and personal conquest of mistakes.

---

* Lectures on Art, delivered before the University of Oxford, &c. By John Ruskin, M.A., Slade Professor of Fine Art. Oxford: Clarendon Press, 1870.

Owing to these two things then—ignorance of the real state of the poor, and the vicious idea of interference from above with the poor—the remedies which Ruskin proposes are unpractical. At the same time many of his hints, divorced from their principles, are valuable, and we cannot doubt the earnestness and charity with which he speaks, nor refrain from loving him, though we disagree with him. But with the want of practical knowledge has come exaggeration, and with exaggeration disproportioned remedies; and the world, listening to the recital of woes rendered unreal by the violence of the denunciations, and still more unreal by the proposals for their abolition, has lent its ear to Mr. Ruskin for a transient hour, and smiled and gone on its way, and he, having expended so much force for nought, and meeting no real opposition, has slid into melancholy, and from thence into despair.

Moreover, the treatment of such subjects at all, at least their direct treatment, was a great mistake on his part, the error of mistaking his calling. He has been given great powers, as great as those bestowed on any man in this century. He has read the book of nature with unwearied diligence and conscientious observation. He is in every sense a student. But he is far more, in that he is a man of genius; for he can not only see rightly (see the outline beneath the fulfilment), but he can express with passion which is sufficiently tempered to be intense, and with copiousness sufficiently charged with fact to be interesting, that which he has seen in the natural world. It is not too much to say that for many of us whose deepest pleasure is in the beauty of the world, he has tripled our power of pleasure. And it has been done, not as the poet does it by developing intensity of feeling, but by appealing to feeling through the revelation of fact, and by the exquisite delight which we feel he takes in the discovery and the beauty of the fact, and by the charm of the vehicle through which he tells his story. Nobody before him took the trouble to tell us what mountains were like, for the descriptions of the geologist bear the same relation to the actual mountains that the detail of the skeleton bears to the living man. Nobody before him made the aspect of the sky, morning, noon, and evening, familiar as a household word, nor led us to look on clouds and all their beauty as as much objects of daily observation and delight as the ways of our children or the face of those we love. No one before him took us by the brooks of water and upon the sea, and made every ripple of the one and every wave form of the other a recognised pleasure. Wordsworth gave us much help, but he taught us to feel more than to observe and understand. But Ruskin has taught us to observe and understand, not as the scientific man does for the ends of science, but for the ends of *delight* received from the perception of truth, and no more faithful and splendid work has ever been done. One would say that this observer of the vaster aspects of nature for the end of art would be likely to fail in seeing the loveliness of the infinitely little, of the "beetle panoplied in gems and gold," of the "daisy's shadow on the naked stone," of the opening of a sheaf of buds, of the fairy wilderness of an inch or two of meadow. But neither here has he failed, and the reader of Mr. Ruskin's books may lie on his face in a field for half an hour, or watch the water of a stream eddying round a mossy trunk, and not only feel unremitting pleasure in what he sees, as Keats or Wordsworth would make him feel, but know why he feels his pleasure, add to his stock of artistic fact, and gain additional power of knowing beauty. All our hours of recreation have been blessed through him.

The same delicate sensitiveness to beauty combined with acute critical perception of minuter points of excellence has been applied by him to poetry. Since Coleridge we have had no finer work done on the poets. It is a pity that his criticisms on Dante, Shakespeare, Scott, Wordsworth, Keats, and others, are not collected out of his volumes and published separately.* A book of this kind would be of infinitely more value than the useless "Selections from Ruskin;" a book which irritates one, even more than selections usually do, and has given an entirely false impression of his work to that luckless personage, the general reader.

The work which he has done on pictures has been equally good of the same kind. He was perfectly capable of explaining their technical excellence, but he did not choose to write for artists, and we are glad that he laid this sort of work aside. For, however good it might be for special students, it gave no help to the public, and only led certain would-be connoisseurs to prate about morbidezza and chiar'oscuro, and bold handling and a hundred other things, which in their mouths were little better than cant. We have been delivered by Mr. Ruskin from the technicalities of ignorant persons. He has led us more than all others to look for the conception of a picture, and to study the way in which the artist carried out that conception. He has taught us to compare it with the facts of nature which we are capable of observing, and to judge it partly from the artist's reverence for truth. We can now, having a certain method, enjoy the thing done with a great deal of delight, without knowing how it is done. Of course the enjoyment is not so great as his who can not only appreciate the ideas but also the mode of work; but it is something, and the smattering we had before of artistic phrase was worth nothing. Those who have time and inclination can go further, but the many who cannot have now a real pleasure; they can give a reason why they like a picture instead of talking nonsense. Of course the dilettante Pharisees are angry, but that only increases the general thankfulness of the public.

(*To be continued.*)

◆

COMPETITIONS.

Matlock. — Designs having been invited for the restoration of the parish church of Matlock, Derbyshire, Mr. Blomfield has been called in to adjudicate on them, and has reported in favour of the plan sent in by Mr. B. Wilson, architect, of Derby. The other architects competing were:—Messrs. Wilson and Oldham, Manchester; Mr. Hull, Northampton; and Messrs. Hine and Son, of Nottingham.

Wirksworth.—A meeting of the directors of the Wirksworth Town-hall and Market House Company (Limited) was held on Tuesday week for the purpose of selecting a plan out of the five sent in in competition for the building. The one bearing the motto "Multum in Parvo" was selected by a large majority over "Confido," and "Maltese Cross." A local journal says that the style of "Multum in Parvo" is of "Composite character, or what may be fairly termed the Victorian order of architecture."

◆

SCHOOLS OF ART.

Brighton and Sussex School of Art.—The inauguration of the winter session of this school took place in the Town hall, Brighton, on Friday evening last, under the presidency of the Mayor. The annual report stated that during the year 1869, 527 persons had received instruction at schools under the direction of the master, of which number 430 had been taught at National and other similar public schools, 25 at the day classes of the School of Art, and 57 at the evening classes for artisans, schoolmasters, &c. There were also 15 female students. A good many trades were represented in the School of Art. There were 15 teachers, six carpenters, five clerks, three working jewellers, three painters, two greengrocers, two photographers, two cabinet makers, two engineers, two wood-carvers, two millstone dressers, one stonemason, one whitesmith, one footman, one saw-sharpener, and one engraver. The second annual examination took place in March last, when, in Freehand Drawing, 10 were excellent, and 48 passed, against 8 and 43 respectively in the previous year; in Geometry, the numbers were 10 and 8, against 3 and 6; in Perspective, 2 and 5, against 1 and 3; in Model Drawing, 4 and 18, against 1 and 8; in Mechanical Drawing, none went up in 1869, one did so in 1868, and passed. The total number of prizes received from last year's work was 20, against 11 the previous year, and 4 certificates against 1 on the former occasion; there had therefore been a total increase of 50 per cent. The year 1869, which commenced with a balance of £5 9s. 1d. due to the treasurer, closed with a balance in his hands of £3 0s. 10d., owing chiefly to the handsome donation of a friend. A rather smaller sum than was expected has been received from the Department in the current year (1870), and therefore a favourable balance at its close can scarcely be anticipated, unless further exertions are made. With a larger subscription list the Committee could greatly develope the utility of the school, as well as allow Mr. White, the Head-master, a better remuneration than the inadequate one he now receives." The report concluded with the balance sheet for 1869, which showed that the total amount received, including £42 from the Department and £35 in fees, was £96 10s. 8d.; of this all but £3 0s. 10d. had been spent in salaries, rent, and sundries. The distribution of prizes by the Mayor was succeeded by speeches from Prof. Fawcett, Mr. White, M.P., and others.

Devonport School of Art.—The following are the results of the examination in drawing, with a statement of the success of students in competitive work sent to the Department of Science and Art through the Devonport School of Art; the Science and Art School, Plymouth; and the Branch School of Art, Tavistock, for the year ending May, 1870:—One student completed his examination for the Art Master's Certificate; one student completed all the works (excepting one) for the Art Master's Certificate, but did not present himself for examination, although he received permission to do so; fifty-five students passed in the second grade; sixteen students obtained prizes in the second grade; twenty-two students passed in the third grade; six students obtained prizes in the third grade; five students passed in machine drawing; two students passed in building construction. These numbers have nothing to do with those who have passed in the Science Classes. In connection with this School of Art there is likely to arise a dispute concerning the payment of £10 by the Department of Science and Art of some interest to art teachers generally. The school claims £10 on account of the first-mentioned student, who has passed the first group in the Art Master's Certificate, but the Department, with its usual generosity, repudiates the claim. The question simply rests upon the ground whether the Tavistock branch is a class belonging to Devonport or not, and as it has been included in the usual reports for the last two years, and the works have been sent together, there will be no difficulty of forming a true judgment on the question. In any case the school is determined to press the matter.

Torquay School of Art.—The supplementary return of the successful students in the Torquay School has been received from the Science and Art Department, and shows considerable progress as compared with former years. The following is the list of awards:—George Bedford (p. 2, 16a), animals, in water-colour; Richd. Barrett (p. 1, 2 b), chalk drawing from model; John Turner (p. 1, 2 b), pencil outline of ornament. Two landscapes, in water-colour, from original sketches by Mr. E. Vivian, who also received a premium at the Royal Cornwall Polytechnic for the same series, and an oil-painting from architectural cast by Mr. George Youlden, have been selected for national competition, for medals. Awards were made in the Elementary Section, entitling the school to draw the full capitation grant for the following students:—George Browne, Fred. Johnson, Richard Leaman, Thomas Leaman, Fanny Larter, Mary Lorrain, Thomas Matthews, Kate Mayo, Albert Pratt, Ellen Shopland, William Tucker, and John Turner.

◆

On Saturday last the new line of the Midland Railway Company, connecting Tottenham and Hampstead, was opened for public traffic.

---

* We do not mean to say that we agree with all Mr. Ruskin's views on poetry. On the contrary, we often disagree with him, entirely so, for example, when he represents Keats as morbid and sad—a man of the healthiest nature and of the most happy temperament, till disease laid its hand upon his splendid but undeveloped powers.

ARCHÆOLOGICAL.

Archæological Meeting in Berkshire.—The Newbury District Field Club, of which the Earl of Carnarvon is patron, held their second meeting on Wednesday week, and visited several places possessing great historical interest. The members, who number over 90, assembled in the morning at Speenhamland, and drove in waggonettes, &c., thence to Grimsbury Castle and Camp, from which can be seen the complete chain of ancient forts in that part of Berkshire and the borders of Hampshire, the Beacon-hill on Lord Carnarvon's estate being clearly visible. Grimsbury was undoubtedly a very strong position in ancient times, and commanded the valley in the neighbourhood of Hermitage. It is believed to be the camp to which Alfred drove the Danes after the battle of Yattendon, in 878. Its position is very elevated, and on the road from the Roman stations of Spinæ and Silchester. At the present time it forms part of the extensive estate of Colonel Loyd-Lindsay, M.P. for the county. Dr. Palmer, the hon. sec. of the club, having read a paper on Grimsbury and the other forts situated in close proximity thereto, the antiquaries journeyed on to Aldworth Church, and listened to an exhaustive paper read by the vicar (the Rev. Llewyn Lloyd). In the graveyard stands a famous yew-tree, measuring 9ft. round the trunk, and probably more venerable than the church itself, ancient as that is, having been erected in the early part of the 12th century. The church is now being carefully restored under the superintendence of Mr. St. Aubyn. The building contains a number of curious monumental effigies in stone, representing members of the De le Beche family, who built a castle here and were buried in the church. They were a Flemish family, and came over with William the Conqueror. The figures are of unusual size, and the persons they represent are spoken of among the villagers as the "Aldworth giants." Skeletons have been found there showing remarkable strength of bone and high stature. The last of the line, Sir Nicholas de la Beche, was tutor to the Black Prince in 1347. Queen Elizabeth, accompanied by the Earl of Leicester, rode on horseback to the church to inspect the tombs, most of which lie beneath arches beautifully floriated. The carving of the figures was seriously damaged by the Puritans, who stabled their horses in the church. This is the only instance of so many effigies of the same period being found in one church. The figures and the slabs upon which they lie recumbent are in each case cut out of one piece of stone. After luncheon the Club, conducted by Mr. Luke Lowsley, of the Manor-house, Hampstead Norris, visited Perborough Castle, in the Hundred of Compton. This spot is supposed to be the site of the British city mentioned by the old chroniclers as Nachededorno, destroyed by fire by the Danes. As many as 500 Roman coins, all of copper, were discovered close by, buried in an earthen vessel. Cellars full of burnt corn have also been found there. The intersections of the streets in this ancient city are visible to this day. On leaving Perborough the members made a call on Mr. Lowsley, at Hampstead Norris, and his collection of more than 2,000 coins (mostly found in the district), besides other relics of bygone times, were eagerly examined. The parish church was visited, and in the evening the party returned to Newbury. Votes of thanks were presented to several gentlemen who had contributed to the success of the excursion.

◆

Building Intelligence.

CHURCHES AND CHAPELS.

Castle Hedingham.—The parish church of Castle Hedingham was re-opened on Tuesday week, after undergoing a thorough restoration. The church is dedicated to S. Nicholas, and is Norman and Early English as regards its architecture. The works just completed comprise the restoration of the roof, the restoration of such windows as had been destroyed or mutilated in the fifteenth and sixteenth centuries, and the underpinning and refacing the walls where necessary. An organ chamber has been erected on the north side, opening by means of a screened arch into the north aisle of the church, and by an arch of the same character as the surrounding work into the chancel. The walls internally have been replastered, and the arcading to the windows restored, as also have been the chancel arch and the handsome fifteenth century screen. The ancient stalls have been restored and additional ones erected, also a new altar-table and super-altar. The altar tomb of the Earls of Oxford has been restored and removed from the centre of the chancel to its north side, and the whole of the floor of the chancel has been paved with Minton's tiles. The works have been carried out by Mr. Z. Rodgers, of Earl's Colne, under the direction of Mr. Henry Woodyer, architect, of Graffham, the stonework paving being executed under Mr. Rodgers by Mr. James Pitt, of Colchester.

Craigs.—The parish church of Craigs, Co. Antrim, was re-opened on the 22nd ult., after undergoing considerable alterations and improvements. The additions comprise, on the north, side a transept 22ft. by 16ft., and, on the south side, a transept 22ft. by 18ft.; also a side aisle and porch. The improvements have been carried out from designs by Mr. Thomas Drew, F.R.I.A.I., Diocesan Architect, by Mr. John Thompson, of Belfast, builder. The cost was about £1,300.

Elford.—On Thursday week the Bishop of Lichfield re-opened the parish church—or rather the south aisle and Stanley Chantry—for Divine worship. The other parts of the sacred edifice have been restored at various times of late years. The work of restoration has been carried on by Messrs. Charles Clarson & Son, builders, Tamworth, from the designs of Mr. G. E. Street, architect, London. The ancient chantry or mortuary chapel attached to Elford Church, now restored, was originally built and endowed by Sir John Stanley (Lord of Elford, in right of his mother, Maude de Arderne), in or about the year 1469. It was dedicated to the honour of Almighty God and the Blessed Virgin Mary (Our Lady of Pity), the founder directing that it should be called "The Chantry of the Cross." The entire cost of the restoration has been defrayed by the Hon. Mary Greville Howard.

Gayton.—This church was re-opened by the Bishop of Lichfield on Wednesday week. The church retains several features of the "olden time," which have been scrupulously preserved. Among others the fine Early Norman arch, with zigzag and billet, is of peculiar beauty; it has been carefully restored. There is also a canopied recess in the north chancel wall, containing a recumbent figure. Many old figured tiles remain, which have been worked up in the aisles. Every ancient stone and every moulding connected with the church has been preserved and re-inserted. Two stone coffins were found in the excavations of new aisle and vestry. The architects are Messrs. Habershon & Pite. Mr. A. F. Whittome, of Stafford, was the contractor; Mr. Steel, of London, the clerk of works.

Little Yeldham.—The church of Little Yeldham was re-opened for Divine service on Wednesday week after extensive alterations, which have occupied several months. The east end has been entirely rebuilt, with corner buttresses in stages, and the gable surmounted with a Decorated cross. A new east window in the 14th century style, with trefoil tracery, has been erected, with dormer windows in the latter, and latticed openings in the tower. Internally, the walls have been cleaned and the plaster ceiling whitewashed; a western gallery has been taken down and fresh seats erected. a small space has been partitioned off for a vestry, and the body of the church is seated with low open benches of pine, varnished, and fitted up with book shelves and kneeling boards. The whole of the works were intrusted to Mr. H. Runnacles, of Halstead.

St. Monanco (Fife, N.B.).—An new Free Church, in the Early English style, has just been opened at S. Monanco, Fifeshire. The principal front has a pointed gable pierced with a large wheel window and three lancets. On the right, and standing back a few feet, are the tower and spire, which rise to a height of 70ft. In the base of the tower is the main entrance door. Internally, accommodation is provided for 400 worshippers. What may be termed a transept affords room for a vestry and classroom, with movable partitions, so that when necessary the space thus appropriated can be made available for 100 more worshippers. The entire cost has been rather above £1,000. The church has been erected by local contractors, from a design by Mr. David Horne, of Greenock, Mr. A. Webster, of Leven, acting as clerks of the works.

BUILDINGS.

Barnsley.—New gasworks were opened at Barnsley on Monday. The works are fitted with the most modern appliances and improvements, and are capable ot making a large quantity of gas. Messrs. T. & C. Hawksley are the engineers from whose designs the works have been erected.

Camden-Town.—It is intended to erect a public hall and reading-rooms in the Camden-road, at a cost of from £3,000 to £4,000. The hall will accommodate upwards of 500 persons. The architect is Mr. Frederick R. Meeson.

◆

NOTICE.

WITH the aid of the new postal arrangements, which came into operation on the 1st inst., the Building News will in future be supplied through the post at 15s. per annum, instead of 17s. 4d. as hitherto. The halfpenny postal card will also be found useful to those who have scraps of building information, tenders, intercommunication queries and replies, &c., to send.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn to as briefly as possible, as there are many claimant upon the space allotted to correspondence.]

To Our Readers.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

Letters relating to advertisements and the ordinary business of the Paper should be addressed to the EDITOR, 31, TAVISTOCK STREET, COVENT GARDEN, W.C.

Advertisements for the current week must reach the office not later than 5 p.m on Thursday.

Received.—J. & J. K., W. B., J. B., W. B., J. W., H. M., J. G., W. H. R., S. T., T. G., W. M. & Co., J. M. C., R. M. W., W. & Co., W. E. H., W. B., W. C. T., J. & Co.

J. S. Stent.—Advertisement came too last for last number.

W. J. Jerams.—Sketch returned as desired.

J. D.—Drawing to hand.

W. Bushell & Son.—As stated in our number for September 9, the author of "Handrailing" is Mr. Robert Riddell, of Philadelphia. We are, in fact, reprinting the American edition of his book.

Wm. Doubleday.—The photo. of the model of Working Men's Institute, now in course of erection at Bedford, is to hand. It is a neat building enough, but why have railings on the parapet?

S. G. Bird.—Did you not see it was an American machine?

Jas. Hicks.—Glad to hear from you. Please send the pen and ink sketch for photo-litho.

Carlo Linar.—As you did not mention the name of the Building News the advertisement went into the *English Mechanic*, hence the mistake.

Practice.—Write to the Secretary of the Royal Institute of British Architects, 9, Conduit street, W.

G. W. Hancock.—Messrs. Austin and Son's address is Princes-street, Finsbury, E.C.

◆

Correspondence.

COVENT GARDEN.

(*To the Editor of the* Building News.)

Sir,—I am glad to see that you have called attention to the disgraceful condition of Covent Garden Market. I know pretty much of London and London life, and I am prepared to prove there in no other spot to be found in it like Covent Garden. For pressure and confusion, noise, swearing, dirt, and overcrowding, there is no other place like it. Three times a week—on Tuesdays, Thursdays, and Saturdays—the streets leading to and from Covent Garden up to 10 o'clock in the morning are something like what one would imagine Pandemonium to be. This arises simply from want of space, and it is useless to talk of a remedy unless the capacity of the market is enlarged. Even then the streets leading to it would be so many scenes of noise and disturbance. In fact, the only true remedy would be to have other markets in other parts of London. Billingsgate has earned an unenviable notoriety on account of the choice conversation of its habitual frequenters. In this respect Covent Garden, I am sure, will equal it, for I know nothing more brutal than the ordinary talk of the porters in and about Covent Garden. I hope, Sir, you will continue to agitate this matter until some step be taken to relieve the market and make the locality more peaceable.—I am, &c.,

An Inhabitant.

Sir,—I notice the letter of "Improvement" in your last number. I am pleased to unite with him so far as to thank you for having taken the matter up. In all other points I disagree with him. He appears to me to have mistaken the nature of the grievance as well as the remedy. He speaks of the offensive contents of the dung-carts, and says that they often contain the refuse of pigsties. These allegations have been made before, and have been as often disproved. Will your correspondent tell us where pigsties are to be found within the area open to the collection of the dung-carts? From the information supplied to me by inhabitants of the streets particularly affected I am sure that this part of the statement is untrue, and your correspondent has been wholly misled. His letter proves that he is not a resident in the district.

It is bad enough that these dung-carts filled with stable litter, should come into the streets adjoining the market, and this arises from the necessities of the case—as the market is much too small for the business transacted there. The remedy you point out is the right one, that of an enlargement of the market, and then the empty baskets could be removed to a given place, and the carts come there after the collection of the dung to receive them, and so pass on their way, and thus save the surrounding streets from their presence; one street instead of several would be affected, and the delay which arises from overcrowding would be obviated.

As to the injury that may arise from the baskets becoming infected from the effluvium of the reeking dung, this is a refinement of sanitary science, which to me is incomprehensible. The danger is purely imaginary, as any careful observer will soon discover. The remedy is a proof of that penny wise and pound foolish policy to which you allude as distinguishing our local legislators. The proposal is that the carts bringing in the vegetables should go back empty, and that other carts should be employed to collect the dung. It is just as necessary to carry the dung out as it is to bring vegetables in. The cost of a double traffic, where a single one now suffices, is to be laid upon the price of the produce, for that will be the effect. The suggestion is altogether wide of the mark. The true remedy is to give additional space at the cost of those who derive emoluments from the market.—I am, &c.,

Enlargement.

AMERICAN RAILWAY TRAVELLING.

Sir,—Will you allow one who has lived some years in America, and knows something of railway travelling both in this country and the States, to put in a protest against the summary way in which the writer of an article on "Long Railway Journeys," in last week's Building News, comes to the conclusion that the American system is no safer than our own. The exceptional case of a band of roughs taking possession of a train certainly would hardly be met by one guard or conductor exercising supervision over the passengers, as it may be reasonably supposed that he would be overpowered by numbers. But putting aside what I believe to be an extreme and isolated instance of ruffianism, no one of any experience in both systems would pretend to say that in the American plan is either so much opportunity for unchecked outrage and annoyance, or are there cases almost daily recorded of unprotected females being molested. It is simply impossible, with a conductor constantly passing through all the carriages, for any one to misconduct himself. Surely we pay too dearly for our insular prejudices by continuing to isolate ourselves in dull, cold, gloomy boxes at the mercy of any stray rough who may be locked in with us for an indefinite period. The writer also overlooks the fact that the American carriages are provided with stoves in the winter, and iced water in the summer, with other conveniences necessary for decency and comfort, which our carriages do not possess. Excuse the length of this letter, and if you will give it a place in your columns you will much oblige one who likes to see justice done to the merits of any system that that is good, no matter what country it may belong to.—I am, &c.,

London, Oct. 3, 1870. Cosmopolitan.

OVERCROWDED STATE OF THE PROFESSION.

Sir,—On receiving your paper, as usual, on Saturday, and scanning through the contents, I came to the letter of "J. L. M.," on "The Present Overcrowded State of the Profession." I am not an alarmist, but I look with gloomy foreboding on the future of many hopeful and clever young men who have joined the profession. I am happy to say I have been the means of deterring many from entering it, and have received their thanks. One became a grocer, one a chemist, one entered a brewer's establishment, one a shipbroker's, and several others different mercantile pursuits. Architects, both with and without practice, go on recklessly taking pupils; and young men of all sorts and grades creep into the profession in humble positions and without premium. I am prepared to prove my assertion that a common mechanic is not only better paid, but stands a much better chance of employment than an architect's assistant. I have one son only, and may be supposed to have the means of pushing him on in the profession, but I intend to put him to a business. I wish my warning could reach the ears of fond parents, who see only the tinsel and glitter, and know nothing of what is behind the scenes, not to encourage their sons to enter such a precarious and arduous business. I am in a public office, at what is considered a good salary, though less by half than many of those I have persuaded to embrace commercial pursuits. I know one young man who had paid £300 to be articled, a good draughtsman and useful assistant, with good recommendations, who called at every office in two large towns to seek employment, and at last got employment of a temporary character at 20s. a week to assist in a town survey. We are besieged with young men seeking employment, and offering their services at a "moderate salary," which means 30s. a week. I may address you again on this subject, for it is time something was done to bring about a better condition of things. —I am, &c. J. S.

Oct. 3, 1870.

Sir,—Having been a subscriber to your journal since its commencement, I beg to offer a few remarks, which I trust will be acceptable to your correspondent of last week relative to architects and the treatment of their pupils. I blush to say such principles are most degrading, and have been the means of lowering the profession of architecture in the public mind. Why should men, bearing the name of gentlemen, stoop to so low a level? Pupils are received, premiums are paid, and instruction promised, but never given. Most honourable men! Most honourable profession! Let me suggest an improvement. I would not allow any architect to receive more than two pupils at once. Lawyers are not allowed the profitable luxury of more than two. Why the distinction? This would lessen the number brought into the architectural profession, and in time would work a decided improvement in favour of the profession. I condemn the system of receiving improvers, as being useless and troublesome, and expressing the ignorance, &c., of the architects whose offices they have left. I consider it would work well if a few architects were appointed by the Institute, or the Architectural Association, to examine once a year the articled pupils, and should their office-teaching be found wanting, to censure the architects who have received the parents' and guardians' money.

This might be done by gentlemen who have the profession at heart, and would give their spare time gratuitously for so good a purpose.

In conclusion, I will relate a fact. Some few weeks ago I called on an architect in the W.C. district, and on entering his office I saw seven assistants. I remarked, "You must be getting on first-rate. Any competitions in hand?" "No." "Where is the managing man?" "I cannot afford one." "Why the seven?" "My dear fellow, they are all pupils; premiums from £50 to £200 each. It pays the office expenses; and, with the little business I have, keeps me going."

I felt disgusted with my friend and the profession I have the honour to belong.—I am, &c.

G. T. J.

MR. BARRY'S CASE.

Sir,—Allow me, with all respect, to challenge the correctness of the conclusions arrived at in your article of the 30th ult. with reference to the above. It does not by any means follow that because the law officers of the crown have expressed an opinion on an *ex parte* statement laid before them by the office of works, that that opinion is to be taken as decisive. Does any sensible man act on the opinion of the lawyers opposed to him? Before the law in this matter is admitted to be against the architect, a proper case should be drawn up on his behalf and submitted to one or more able lawyers retained by him; and I question much whether a very different opinion will not be given to that so confidently flourished by the Office of Works.

How does the writer of the article make out that "it is not a question of professional custom—it is a question of law"? And what sort of logic is it that argues that as, but for the percentage paid Sir Charles Barry, he would never have made the drawings, therefore they form part and parcel of the *quid pro quo* of which the bargain consisted? Never was a more decided *non sequitur* than this, as seems admitted by the writer afterwards when he questions the corresponding piece of reasoning. "I have paid for these drawings, *ergo* they are mine." "No," we answer, "you have simply paid for having your building designed and superintended by the architect; and you have no right, legal, moral, or otherwise, to the means or instruments he uses to that end." If, as the writer says, Sir Charles Barry entered into no special contract, then the terms of his contract should be held to be governed by the usage of the profession; and therefore it really is not so much a question of law, but of professional usage, on which the opinion of such a body as the Institute ought to be of more value than that of fifty law officers of the crown.

I have only further to say that were the case mine I should deem it my duty to resist such a demand as the present uncompromisingly, whether supported by the Institute or not, and would have no fear for the result. The onus rests on the Office of Works to show, to the satisfaction of a jury, that this contract with the late Sir Charles Barry was different from the ordinary terms on which an architect is employed, and included the purchase of the drawings; and will that ever be proved? I believe not; and therefore I sincerely hope this question will not be surrendered in a cowardly manner, at the *dictum* of the present Commissioner and his lawyers; but will at least be tried in a proper and constitutional manner.—I am, &c.

F.R.I.B.S,

SEWAGE WORKS.

Sir,—May I ask the favour of your correcting an error in your report of the paper recently read by me before the Social Science Congress, on "Sewage and Sanitary Works," where I am stated as having referred to *Accrington* as being a town where the sewage works had been carried out in accordance with my principles, and (inferentially) by me. I beg to state that I had nothing whatever to do with the sewer works at Accrington, nor do I know the principles of construction. In reply to Mr. Chadwick, I referred to *Great Harwood, near Accrington*, as being a place which I thought had received especial advantage from the carrying out of sanitary works, though I did not by any means refer to it as a perfect scheme. To any gentleman interested in the subject, I shall be glad to show executed works, or to explain what I consider sound principles of sanitary engineering.—I am, &c., Joseph Brierley, C.E.

New Market-street, Blackburn, October 3rd.

◆

Intercommunication.

QUESTIONS.

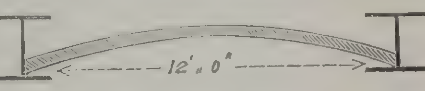
[1986] EXAMINATIONS AT THE INSTITUTE.—I shall be glad if some of your readers will inform me if any probationary work is required to be submitted to the Institute of British Architects previous to being examined in the preliminary examination; and also if there is any examination at the Institute of Surveyors.—Nottingham.

[1987] VENETIAN BLINDS.—Can any reader give me addresses of manufacturers or vendors of tapes, cords, and pulleys used in venetian blinds?—G. W. Hancock.

[1988] BLUE BRICKS.—Could you inform me what ingredients are required for making blue bricks out of hard black marl clay? By so doing you will oblige?—W. A. Day.

REPLIES.

[1953] FIREPROOF FLOORS.—"Dennett's" arches are composed of concrete alone, and are applied to the construction of floors either in the form of one, or of a series of arches, with a very small rise. They are formed upon temporary centres, which may be removed after an interval of two or three days, according to the state of the weather and the size of the arches. Spans of from 6ft. to 12ft., as in the sketch, can be bridged over in this manner. The thickness of the arch varies from 3in. to 5in. at the crown, and from 5in. to 10in. at the springing. Rolled or riveted iron girders form the intermediate support of the arches, while the outer haunches rest upon projections or corbels in the brickwork.—B. B.



[1961] POST-OFFICE CLERKS.—Examinations for junior appointments as writers were held every Thursday and Friday last month. They are now stopped for the present, and it is uncertain when they will recommence, as there were no less than 300 applicants at one of the recent examinations. If a youth gets an appointment he receives pay at the rate of 12s. per week until he has served long enough to entitle himself to promotion. He must then present himself at another examination, which is of a very superior class to the first, and if he passes it he becomes permanently attached to the department.—P. O. O.

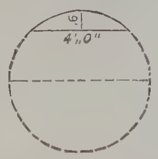
[1964] CAST-IRON.—For all work of an engineering description in which the material has to undergo considerable strain the castings should be made from the best grey metal. All girders, columns, and work of this sort is always made from it. But when the material has only to stand a small strain or pressure an inferior description will answer perfectly well.—Foundry.

[1974] HOUSES FROM STRAW, Etc.—In the *Working Man*, a paper published by Cassell, some two years ago, there was made mention of workmen's cottages being built of bundles of straw and some other material. I believe they were building near Twickenham, about ten miles from London.—E. M.

[1977.] DIAMETER OF SPHERE.—Divide the square of half the chord line or base of the segment by the height or versed sine, and to the quotient add the height or versed sine. The answer will be the diameter required.

24in. = half the base reduced to inches.
24
—
96
48
—
9in.) 576
—
64
9in. = height or versed sine.
—
73in. = 6ft. 1in.—Frank Chessell.

[1977] DIAMETER OF SPHERE.—Given the base of the segment of a sphere, 4ft. and the height 9in. Required the diameter of the sphere completed. Rule: divide the square of half the base by the versed sine (height), to the quotient add the versed sine, and the sum will be the length of the diameter. Thus,



$$\frac{\left(\frac{4\text{ft.}}{2}\right)^2}{\frac{9}{12}} + 9\text{in., or } \left(\frac{4}{\frac{9}{12}} + 9\text{in.}\right) = 5\tfrac{1}{3}\text{ft.} + 9\text{in.} = 6\text{ft.}$$

1in., length of diameter.—W. S.

[1977] DIAMETER OF SPHERE.—Square half the base of the segment given, 4ft. = 48in., divide by the height — 9in., then add the height. Thus half of 48 = 24 × 24 = 576 ÷ 9 = 64 + 9 = 73in. = 6ft. 1in., the diameter of sphere complete.—Alpha.

[1980] WALL PAPER.—If the wall will not hold pasted damp-proof paper, tack it to the plaster and paste the ordinary paper upon it. The damp-proof paper can be bought at the paperhanger's.—P. D.

[1980] WALL PAPER.—Wash the wall before papering with two or three coats of shell or seed lac dissolved in naphtha or methylated spirit, till a slight glaze appears on the face of the plaster, showing that it will not absorb more.—B. J.

[1983] WATERWORKS.—The following is the actual cost in Liverpool of laying, lead waterworks, and labour, including opening and closing trench, with paving :—

3in.	pipes as above	1s. 3d.	per yard run
12in.	,,	3s. 8d.	,,
24in.	,,	8s. 8d.	,,
36in.	,,	13s. 9d.	,,

Mr. Bateman has estimated the cost of laying, lead, and labour, trenching, and carting as follows :—

3in.	pipes as above	1s. 9d.	per yard run
12in.	,,	4s. 0d.	,,
24in.	,,	10s. 0d.	,,
39in.	,,	16s. 8d.	,,

Note that the first is the actual cost, the second the estimated, the latter including carting. As to the second part of the query, there is no pressure in the pipes beyond that due to the head of water, but there is the resistance to be overcome—first from air, secondly from friction caused by bends, outlets, valves, and inequalities in the pipes. The pressure of the atmosphere is, as we know, 15lb. per square inch. The friction is so variable that an empirical rule cannot be given, but tables may be found in all books treating of hydraulics. I will just give him the particulars of a test I have been favoured with, the result of which was that on a length of 7·69 miles there was a loss of head from friction of 19ft. per mile. On a length of 6·96 miles the loss was 12ft. per mile. The pressure due to a head of water is equal to the weight of a square inch of water 1ft. long multiplied by the head and the area of the pipe. For instance, take a head of 200ft., weight of inch of water 1ft. long = ·434lb. × 200 = 86·800lb. pressure per square inch. Say a pipe 2ft. diameter = 452 square inches × 86·800 ÷ 2240 = 17·5 tons pressure due to head of 200ft.—A. L. S.

◆

WATER SUPPLY AND SANITARY MATTERS.

Proposed Utilization of Dundee Sewage.—The report of Mr. Bateman, C.E., on the drainage of Dundee and Lochee, and the utilization of the sewage, was on Wednesday laid before the Police Commissioners. Mr. Bateman proposes to drain Lochee, and to connect the sewers with those of Dundee, and draw off the sewage to a vacant space of ground on the Links of Barry, about 2,000 acres in extent. He estimates the daily flow of sewage at 20,000,000 gallons, and the maximum flow, including storm water, a 27,500,000. To carry this quantity, he proposes the construction of a sewer 5ft. in diameter, with a fall of 2ft. 6in. per mile. The bottom of the sewer would be at Monifieth Links, and at this place pumping engines would have to be erected for raising the sewage to such a level as would enable it to flow by gravitation to Barry Links. The length of the main sewer would be 5¼ miles. Three engines of 50 horse-power each would be required to do the pumping work, and their cost, with that of the construction of the sewer, would amount to £82,000. The annual expense of pumping, tear and wear, &c., is stated at £700; and taking the interest on a capital sum of £90,000 at 4½ per cent. the total annual cost would be £4,700. The cost of the ground to be acquired is estimated at £5 an acre, or £10,000 for 2,000 acres. Mr. Bateman concludes as follows: —"The most careful calculations upon the actual results obtained from sewage irrigation in other places show that its value, when applied to the production of grass, varies from ½d. to 1d. per ton on the average of the year, and apparently much more than this when applied to other crops. Assuming but ½d. per ton, which is only half of the lowest of these estimates, the annual value of the sewage due to 120,000 persons, when fully supplied with water, will be £8,500."

Thetford.—On Tuesday week Mr. Arnold Taylor, one of Her Majesty's sanitary inspectors, held a court at the Thetford Town-hall, for the purpose of conferring with the Local Board, and hearing evidence as to the sanitary condition of the town. Mr. Taylor also made a personal inspection of the borough, which comprises 6,460 acres, with a rateable value of £10,000. Mr. Taylor said that although there were doubtless some bad places, on the whole the sanitary state of the town was better than he had expected to find. In answer to questions as to what he thought best to be done to meet the requirements of the Privy Council as regards the drainage, &c., Mr. Taylor said that the system of sewage irrigation had been found to answer best. As regards the water supply, he contended that the adoption of a proper system of water works would be a relief, rather than not, to the rates, and landlords usually found it to be more economical than the system of pumps and wells. The Board would in the first instance have to construct the main, and the owners or occupiers would have the water laid on as they thought proper. There was no compulsion as regards the consumers, but it had generally been found that the tenants of cottage property preferred, when once adopted in a town, this system of water supply to that of the pumps or wells, and were ready enough to pay the small additional tax. As regards the cost, the inspector said a reasonable time would be allowed the Board to construct their works, and that the Act provided that such Boards might borrow the requisite sum of money, and pay it back by annual instalments. The meeting then dissolved.

Hurworth-on-Tees.—On Monday week a meeting was held at Hurworth-on-Tees, in accordance with the Sanitary Act, for the purpose of receiving the report of the committee appointed to make inquiries and invite applications for the situation of surveyor. The committee presented applications and testimonials from Mr. G. Dickenson, Darlington; Mr. C. E. Crozier, Durham; Mr. John Ross, Darlington; and Messrs. I'Anson & Robinson, Darlington. Mr. Dickenson proposed that he should be paid 5 per cent. up to £1,200, and 2½ per cent. afterwards, or to do the whole work for £100. Messrs. I'Anson & Robinson offered to carry out the works on payment of 5 per cent. on the estimate. The other applicants tendered for 5 per cent. Two motions were made, one that Mr. Dickenson should be appointed, and the other that Messrs. I'Anson and Robinson should be selected. It was resolved by 14 votes to 1 that Mr. Dickenson should be appointed to carry out the works.

Sunderland.—At the monthly meeting of the Wear Commission, at Sunderland, on Wednesday week, Mr. E. C. Robson moved the appointment of a committee to attend the inquiry of the Rivers Pollution Commission at Sunderland or Durham (the clerk intimating that the Commission would probably visit Sunderland), with reference to the pollution of the river. The clerk and others stated that all the rubbish of Durham was put into the river, and carried down to Sunderland, where the Commissioners had to dredge it out. The motion was adopted, the committee appointed to consist of the chairman of the Works, Traffic, and Finance Committees, Alderman Candlish, M.P., Mr. E. C. Robson, and Mr. W. Stobart.

Spennymoor.—Election of a Surveyor.—At the usual monthly meeting of the Spennymoor Board of Health on Wednesday week, the only business of importance was the election of a surveyor and inspector of nuisances, in the room of Mr. Byers, resigned. Three candidates applied for the vacancy, viz., Mr. R. Beckwith, Huddersfield; Mr. Ralph Foster, Gateshead; and Mr. Robert Rule, Durham. The applications and testimonials of the candidates having been read, the Board proceeded to ballot for the choice of one of the candidates, with the following result: For Mr. Foster, 4; Mr. Rule, 2; Mr. Beckwith, 1. An engagement between Mr. Foster and the Board was then made for twelve months, either party to give three months' notice to discontinue the connection.

◆

LAND AND BUILDING SOCIETIES.

Durham County Permanent Building Society.—On Thursday week a general meeting of the shareholders of the unfortunate Durham County Permanent Building Society was held in the offices in Sunderland, Mr. Alderman Wilson presiding, to consider the state of the society's financial affairs, and to decide on the course to be taken with respect to the petition in Chancery for the winding-up of the concern presented last week by Messrs. Oliver & Botterell, on behalf of clients. Mr. S. S. Hodgson, who is at the head of the committee of investigation appointed some time ago, and who presented a report on the state of the accounts at a previous meeting, now presented the report of Mr. Tillman, architect, and another gentleman, who had been appointed to value the property mortgaged to the society. From this report it appeared that the state of the society's affairs is very much worse than that which an examination of the books and accounts had previously revealed. It was proposed by a shareholder that there should be a voluntary winding-up under the inspection of a committee of twelve of the shareholders, but after some discussion this was thought impossible; and it was therefore resolved not to oppose the petition in Chancery for winding up the society. It was resolved that Mr. S. S. Hodgson should be proposed as the official liquidator when the matter next came before the Court, and that the present solicitors should be retained to act on behalf of the society.

Union Building and Investment Society.—The fifteenth annual general meeting of this society was held on Tuesday week at the society's offices, Bridge-street, Bristol. The report and balance-sheet, which were explained by the secretary, presented evidence of the society being in a very satisfactory condition, both as regards its securities and investments. It was shown that the income of the society from its commencement was £132,600, that there had been advanced on mortgage securities of freehold and leasehold property over £73,000, and that the existing investments, exclusive of accumulations, amounted to £36,2 0. The total number of shares in force at the date of the balance sheet was 1,956 3-10ths, held by 379 shareholders. The secretary explained that the bonus which had been allotted and paid to those shareholders whose shares were completed, both borrowers and investors, was 7 392 per cent. on the amounts paid, or £5 7s 11d per share - equal to rather more than a year's subscription.

◆

LEGAL INTELLIGENCE.

A Disputed Contractor's Bill.—Metcalfe, v Ditchmond.—In this case, heard at the Blackburn County Court on Monday week, it appeared that the defendant had taken the contract from a Mr. Farnworth for the erection of two cottages, and the plaintiff, who is a contractor and builder, contracted to do the brick and stone work of the two houses for £110. Some extra work was done, and the plaintiff claimed £11 11s. 10d., as a balance of account, and for extra work. An agreement was signed by the plaintiff before the work was commenced. The work was to be done according to a plan deposited with the clerk of the Local Board at Oswaldtwistle.—For the defence it was contended that the extra work was occasioned by the blundering of the plaintiff, who had deviated from the plan and agreement. The question was raised as to whether the agreement was altered after being originally written, and as the issue devolved upon this the case was adjourned for a week for the production of a witness who had seen the agreement signed.

Rights of the Crown over Highways.—A number of men belonging to the Royal Engineers were summoned before Mr. Maude, at the Woolwich Police Court, on Tuesday, at the instance of the Local Board. The War Department had ordered that the Royal Marine Barracks should be supplied with gas from the Government gas factory, and the Local Board refused permission to open the public roads, except on condition that the War Office should pay £112 per year rental, being equivalent to the sum which the Board would lose in rates by the gas supply being cut off from the local companies. The Royal Engineers, however, proceeded to open the roads, and were summoned. Mr. Clulow, War Office solicitor, argued that the rights of the Crown were superior to all local authority. Mr. Maude declined to give judgment for the Board. His opinion was that the Crown had certain rights over the Queen's highway, and that the Board ought not to have used a questionable power to obtain a collateral advantage.

The Lambeth Potteries Nuisance.—Several summonses were heard before Mr. Ellison on Thursday last under the Smoke Act, against stokers in the service of Mr. James Stiff, potter, of Lambeth, and fines inflicted, ranging from 2s. 6d. to £2, with costs. At the close of these cases a number of gentlemen, including the Rev. Dr. Lees; Mr. L. H. Spooner, agent to the Archbishop of Canterbury; Mr. Lee (Lee and Boulton), solicitors to the archbishop; Mr. Owen Lloyd Williams and Mr. Edward Brooking, sanitary inspectors of S. Margaret's and S. John's, Westminster, came before the magistrate to ask his assistance under most important circumstances. Mr. Spooner said they had to ask his worship for advice in a matter highly important to health. For some time, not only the inhabitants in close proximity to the potteries of Mr. Stiff and Messrs. Doulton, at Lambeth, but also those on the opposite side of the river, at Millbank and neighbourhood, had suffered from the white vapour frequently issuing from the chimneys. It was not the black smoke of which the summonses just heard related to, but in reality muriatic acid. That was a more dangerous thing to public health, whilst it was extremely injurious to vegetable life. Even the hardest stone would be affected by its action, and that was evident in some only a few months back used in the alterations and improvements at Lambeth Palace.—Mr. Ellison said he had no power under the Smoke Act to aid the complainants, although in the passing of that act the matter now mentioned was referred to as being far more dangerous than the dense black smoke.—Inspector Heath, of the L division, said every endeavour had been made to abate this dangerous nuisance, but the authorities were powerless to proceed under the act. The vapour now spoken of came from the salting fires used for glazing.—Mr. Ellison said the only course would be to place the matter in the hands of the sanitary authorities, and proceedings might then be taken under the Nuisance Removal Act with reference to noxious vapour. Dr. Lees said he resided at Lambeth-terrace, and that the nuisance was most intolerable. He had some few months back a number of picture frames gilded, which were now quite blackened from the effect of the vapour. Trees and shrubs likewise suffered. Another gentleman from Millbank-road gave an account of the dangerous and destructive character of the vapours from the potteries.—Mr. Ellison said no doubt it was a most important thing to put down, if possible, such a dangerous nuisance. The complainants had better lay the case before Dr. Puckle, the medical officer of health to the vestry of Lambeth, and the other sanitary authorities, in order to see what steps could be taken. The applicants, having thanked his worship, withdrew to carry out his suggestion.

◆

The central shaft of the Hoosac Tunnel is complete. It is 1,030ft. deep. The tunnel proceeds at the rate of 10ft. per day, and a total of 11,765ft has been excavated.

Our Office Table.

New Railway Works in Liverpool—The railway companies are cutting up Liverpool. In order to enable the Great Northern, the Manchester, Sheffield, and Lincolnshire, and the Midland Railways to compete with the London and North-Western line, they have purchased a large plot of property for a station in the very centre of the busiest portion of the town, including a part of Bold-street, which is the Bond-street of Liverpool. This central station is to be approached by large tunnels, with shafts and sub stations in different portions of the town.

A Defect in the Smoke Nuisance Act.—A local contemporary calls attention to the fact that the vapour of muriatic acid, which is injurious to human life and destructive of vegetation, may be emitted from chimneys with impunity, so far as the Smoke Act is concerned. "That stupid specimen of legislation was to have embraced a clause bearing on this subject, but the Act passed without it. And now see the consequences. An application was made at the Lambeth Police-court on Thursday week for proceedings to be taken against Mr. Stiff and Messrs. Doulton, the potters. It was shown that the vapour coming from the salting fires used for glazing in their potteries endangered public health, destroyed everything—picture-frames, trees, shrubs, and even the stone used in the repairs of Lambeth Palace. The magistrate was sorry, but could do nothing. The Smoke Act deals with black smoke—this is white; and so proceedings will have to be taken under the Nuisances Removal Act, if proceedings can be taken at all."

The Air of London.—South London (says a local journal) ranks next to the West-end in the purity of its air, that is, in the abundance of oxygen it contains. This is demonstrated by tests made by Dr. Angus Smith. Of oxygen in 100 parts of air he found as follows:—W.C. and W. districts, 20·925; S. and S.W. districts, 20·883; E. and E.C. districts, 20·860; and N., N.E., and N.W. districts, 20·157. It will thus be seen, says our contemporary, that the "northern heights of London," supposed to be strongholds of health, come out of this trial worse than the maligned South.

Accidents at the Hall of Arts and Sciences.—On Wednesday afternoon two accidents occurred at the Hall of Arts and Sciences now erecting at Kensington. A painter, whose name cannot yet be ascertained, was at work in the upper part of the building, and while so occupied dropped his brush down a large shaft. This shaft ascends from the ground to the top in a sloping and zig-zag manner, and contains several bends or angles. The painter, thinking his brush might have lodged upon the uppermost ledge, leaned over, but losing his balance he was precipitated headlong about 50ft. It was impossible for any one to follow, and as yet no one knows in what part of the shaft the man is, or whether he is alive. Very great excitement prevailed amongst the men, as the brickwork at the bottom is of immense thickness, and if broken through may jeopardise the safety of the upper structure. The other case was that of a lad about 15, who was "lathing" for the plasterers, when the plank he was standing on gave way, and he fell about 15ft. on to the edge of a large tub beneath, and thence into the water. He fell upon his chest, and the injuries he received are likely to prove fatal.

Tramways.—On Wednesday another portion of the road tramway system now being constructed in the South of London, extending from the Horns Tavern, Kennington, to Hercules-buildings, near Westminster Bridge, was opened for public traffic. By this extension the public will have the advantage of direct tramway communication from Brixton to within a short distance of Westminster Bridge.

Wood.—The consumption of wood in the United States is enormous. Railway sleepers alone require 150,000 acres of the best timber every year. The annual expenditure in wood for railway buildings, repairs, and cars, is 38,500,000 dols. The locomotives in the United States consume annually 56,000,000 dols. worth of wood. The wood industry amounts to 500,000,000 dols. per annum, and there are 400,000 artisans in wood.

Chips.

It is proposed to form a new cemetery and burial ground for the Hale district, Farnham.

The two experts who were appointed to report regarding the fall of the gable at Belmont-crescent, Glasgow, attribute the fall of the wall to the inferior quality of the stone and lime used, and to the too-hurried construction not allowing time for the consolidation of the mortar. This is the old story. Inferior materials and inferior work, and rapid decay and destruction as the inevitable consequence.

In south London a piece of land is advertised by an auctioneer for sale as follows:—"This eligible plot of land to be let on long building lease, or to be sold; *equally suited for a church or a tavern.*"

It is stated that the Companionship of the Bath is to be conferred upon Sir William Tite, M.P.

Millbrook Church, Hants, is to be rebuilt, at an estimated cost of between £5,000 and £6,000.

It is said that a new Masonic Hall is to be built in Park-row, Bristol. The entire plan embraces a banqueting hall, with its necessary appendages, including kitchens, and will cost £5,000.

Oldstock Church, Wilts, was re opened yesterday (Thursday), after restoration.

An exhibition of ecclesiastical art is to be held at the Philarmonic Rooms, Southampton, during the week of the Church Congress.

Timber Trade Review.

Messrs Churchill & Sim's sale on the 28th ult. consisted of

40,000	Spruce deals, &c.
130,000	Quebec pine deals, &c.
30,000	S. Petersburg, Onega, and Archangel deals, &c
60,000	Swedish deals and battens
50,000	Norway deals and battens
40,000	Finland deals and battens
2,000	Pitch pine planks
200,000	Prepared flooring boards
3,400	Fresh Norway spars
60	Riga logs
40	Loads Stettin oak
200	,, Swedish balks
120	,, Picton birch
20	,, Quebec hickory
20	,, Quebec walnut
50	,, Quebec birch
173	,, Quebec oak
100	,, Quebec red pine
250	,, Quebec yellow pine
1,800ft.	Norway and Swedish mouldings &c., &c.

Prices as under:—

	Per	£ s.		£ s.
Archangel 2nd yellow	Petg. std	9 0		
Do. deck	do.	8 10		
Bjorneborg yellow	do.	6 15	to	7 0
Do. white	do.	5 15		
Christiana millsawn yellow	do.	8 5	,,	8 10
Dram 3rd yellow 2½ × 6½	120 12ft.	5 10	,,	6 10
Do. 2nd do.	do.	6 15		
Do. 3rd white	do.	5 0	,,	5 10
Christiana 2nd yellow	do.	6 10	,,	7 0
Do. 3rd do.	do.	6 0		
Drobach white balks	load	1 6		
Fredrickstadt 2nd yellow	Petg. std.	6 10		
Georgia pitch pine	do.	12 5	,,	12 15
Gothenburg mixed yellow 3 × 9	do.	9 0		
Do. 3rd do. 4 × 9	do.	8 10	,,	8 15
Do. 3 × 9	do.	8 15		
Do. 4 × 6	do.	7 10		
Do. 4th yellow 4 × 6	do.	7 0		
Do. 3 × 9	do.	9 0		
Do. 4th white 4 × 9	do.	6 15		
Do. 4 × 6	do.	6 5		
Holmstrand 1st white 2½ × 6½	120 12ft.	6 10		
Kragero mixed yellow 2½ × 6½	Petg. std.	6 5	,,	6 10
Do. 3rd yellow 2½ × 7	do.	5 15		
Do. mixed white 2½ × 7	do.	6 15		
Ny Carleby mixed yellow 2½ × 7	do.	8 0		
Do. white 3 × 11	do.	8 0		
Do. 2½ × 9	do.	7 0		
Do. 2½ × 7	do.	7 0		
Do. 3 × 7	do.	7 0		
Petersburg 1st yellow 3 × 11	do.	12 15	,,	13 0
Do. 3 × 9	do.	9 10		
Do. 1st white 3 × 11	do.	9 10	,,	9 15
Do. 3 × 9	do.	8 15	,,	9 5
Do. 2½ × 7	do.	8 10		
Do. 3 × 7	do.	7 10	,,	8 10
Do. 2nd white 3 × 9	do.	7 10		
Onega 1st yellow 3 × 11	do.	15 0		
Do. 3 × 9	do.	14 0		
Do. 1¼ × 7	do.	13 10		
Do. 1st white 2½ × 9	do.	9 5		
Quebec 1st bright 12ft. 3 × 11	do.	19 10		
Do. 1st dry floated	do.	17 0		
Do. 2nd bright	do.	13 5		
Do. 2nd dry floated	do.	12 0	,,	12 10
Do. 3rd bright	do.	9 0		
Do. 3rd dry floated	do.	8 15	,,	9 0
Do. oak	load	6 10		
Do. hickory	do.	£5 2s. 6d.		
Do. 1st spruce	120 12ft., 3 × 9	18 10		
Do. 2nd do.	do.	14 0		
Do. 3rd do.	do.	12 15		
Do. 1st red pine 3 × 11	Petg. std.	16 0		
Do. 3 × 7	do.	14 0		
Do. 2in.	do.	13 0		
Quebec 2nd red pine 3 × 11	Petg. std.	£11 15	to	£12 15
Do. 3rd do. 3 × 11	do.	8 10		
Do. (9ft.) 3 × 11	do.	7 15		
Do. 3 × 7	do.	6 15		
Rimouski 3rd spruce 3 × 7	120 12ft. 3, 9	11 15		
Do. 1st do. 3 × 11	do.	16 0	,,	16 5
Do. 3 × 8	do.	13 0		
Do. 3 × 7	do.	14 0		
Do. 2nd spruce 3 × 11	do.	13 0	,,	13 10
Do. 3 × 8	do.	12 5		
Do. 3 × 8	do.	12 15		
Seroko 1st yellow 3 × 11	Ptg. std.	14 5		
Do. 3 × 9	do.	13 5		
Do. 2½ × 7	do.	12 10		
Do. 1¼ × 7	do.	12 10		
Do. 2nd do. 3 × 11	do.	10 15		
Do. 3 × 9	do.	9 10		
Do. 1½ × 7	do.	9 0		
Do. 1¼ × 7	do.	9 0		
Do. 3rd do. 3 × 11	do.	8 15		
Do. 3 × 9	do.	8 10		
Do. 1½ × 7	do.	8 0		
Do. 1¼ × 7	do.	8 5		
Do. 4th yellow 3 × 11	do.	7 15		
Swartwick 3rd yellow 3 × 9	do.	8 15	,,	9 0
Do. 3 × 7	do.	7 10	,,	7 15
Do. mixed 4 × 9	do.	10 0		
Stockviken mixed yellow 3 × 8	do.	8 0		
Do. 3rd do. 3 × 8	do.	7 10		
Soderham 3rd yellow 2½ × 7	do.	8 10		
Uleaborg mixed yellow 4 × 11	do.	9 15		
Do. 4 × 9	do.	9 5		
Do. 3 × 9	do.	9 0		
Do. 3 × 7	do.	8 5		
Do. 1 × 9	do.	7 10		
Do. 1½ × 7	do.	8 0		
Do. 1 × 7	do.	7 10		

LATEST PRICES OF MATERIALS USED IN CONSTRUCTION.

Timber.

	£	s.	£	s.
Teak ....load	£13	0	13	10
Quebec, red pine	3	15	4	15
,, yellow pine	4	0	4	15
St. John N.B. yellow	0	0	0	0
Quebec Oak, white	6	0	6	10
,, birch	3	15	5	0
,, elm	4	5	5	5
Dantzic oak	0	0	0	0
,, fir	3	5	4	10
Memel fir	3	10	4	10
Riga	3	10	4	10
Swedish	2	13	3	0
Masts, Quebec red pine	3	15	5	5
,, yellow pine	3	15	5	5
Lathwood, Dantzic, fm	3	15	5	10
,, St. Petersburg	5	10	6	10
Deals, pr C., 12 ft. by 3 by 9 in.,				
Quebec, white spruce	13	0	18	10
St. John, white spruce	12	10	14	0
Yellow pine, per reduced C.				
Canada, 1st quality	16	10	18	10
2nd do.	12	0	13	10
Archangel, yellow	11	10	13	0
St. Petersburg, yel.	11	10	13	0
Finland	£7	10	£8	10
Memel	0	0	0	0
Gothenburg, yellow	9	0	11	0
,, white	8	0	9	0
Gefle, yellow	10	5	12	10
Soderham	8	10	12	0
Christiania, per C., 12 ft. by 3 by 9 in. yellow	10	0	12	10
Flooring boards, per sq. of 1in., first yel	7	6	10	6
First white	7	0	9	6
Second qualities	6	6	8	6
Pumice Stone pr ton	6	0	8	0

Oils, &c.

	£	s.	£	s.
Seal, pale....per tun	36	0	36	10
Sperm body	80	0	0	0
Cod	38	0	38	10
Whale, Sth. Sea, pale	36	10	37	0
Olive, Gallipoli	43	0	49	0
Cocoanut, Cochin, ton	43	10	44	0
Palm, fine	39	10	40	10
Linseed	30	5	30	10
Rapeseed, Eng. pale	43	10	0	0
Cottonseed	28	0	34	0

Metals.

Lead —

		£	s.	d.	£	s.	d.
Pig, Foreign	per ton	£.7	10	0	£ 0	0	0
,, English W.B.	do	19	10	0	20	0	0
,, Lead Co.	do	19	15	0	20	0	0
,, Other brands	do	18	0	0	19	0	0
Sheet Milled	do	20	10	0	0	0	0
Shot, Patent	do	22	0	0	0	0	0
Red or Minium	do	19	15	0	20	10	0
Litharge, W.B.	do	0	0	0	0	0	0
White Dry	do	30	0	0	0	0	0
,, ground in oil	do	0	0	0	0	0	0

Copper:—

		£	s.	d.	£	s.	d.
British—Cake and Ingot	per ton	£68	0	0	0	0	0
Best Selected	do	70	0	0	0	0	0
Sheet	do	71	0	0	73	0	0
Bottoms	do	78	0	0	0	0	0
Australian	do	69	0	0	72	0	0
Spanish Cake	do	69	0	0	0	0	0
Chili Bars, cash	do	62	0	0	63	0	0
,, Refined ingot	do	68	0	0	71	0	0
Yellow Metal	per lb	0	0	6½	0	0	0

Iron:—

		£	s.	d.	£	s.	d.
Pig in Scotland, cash	per ton	£2	11	1	0	0	0
Welsh Bar, in London	do	7	2	6	7	12	6
,, Wales	do	6	12	6	6	15	
Staffordshire	do	7	10	0	8	0	
Rail, in Wales	do	7	0	0	7	5	
Sheets, single in London	do	9	10	0	10	5	
Hoops, first quality	do	8	10	0	9	5	0
Nail Rod	do	7	10	0	8	0	0
Swedish	do	9	15	0	10	0	0

Trade News.

The Portland Stone Trade.—We are glad to note an impetus in this trade. Several of the quarries have received orders, and the saw mills will have enough work to keep them employed till November.

TENDERS.

Wilderness-row.—For New Foresters' Hall, Messrs George Lansdown & Pollard, surveyors:—

		Extra if malm facing.
B. Nightingale	£7829	£50 0 0
King & Son	7700	65 0 0
W. Higgs	7653	47 0 0
Crabbe & Vaughan	7500	120 0 0
London Building Co.	7370	32 10 0
Eaton & Chapman	7320	30 0 0
Capps & Ri[illegible]	7176	46 7 6
Winship	7130	40 0 0
Wicks, Bangs, & Co.	6989	40 0 0
W. Henshaw	6865	45 0 0
W. Wigmore	6850	45 7 6
Crockett	6639	31 0 0
Hoare & Cleland	6298	149 0 0

KENSINGTON.—For the erection of new infirmary and other buildings for the guardians of the poor of the parish of S. Mary Abbotts, Kensington. Messrs. Alfred Williams & H. Saxon Snell, architect. Quantities supplied by Messrs. Lansdowne & Pollard and Messrs. Mann & Saunders:—

	Gross amount.	Credit old materials.	Credit fittings.	Net amount.
	£	£	£	£
J. & A. Wright	40815	700	55	40060
T. A. G. Hockly	40550	650	120	39780
J. D. Cowland	39750	650	120	38980
Scrivener & White	38414	438	33	37943
R. Lacy	38100	410		37690
W. Crckett	37980	450	35	37495
J. & S. Williams	37370	350	20	37000
Capps & Ritso	36950	320	30	36600
Crabb & Vaughan	36975	400	50	36525
W. Higgs	36923	600	50	36273
Blackmore & Morley	36856	600	65	36191
Manley & Rogers	36174	450	58	35666
Markwick & Thurgood	35559	363	43	35153
W. Wigmore	35125	496	44	34585
J. A. Wilson	35420	790	80	34550
Henshaw	33957	440	60	33457
Hill, Keddell, & Co.	33740	380	90	33270
J. T. Chapple	33783	500	50	33233

LAMBETH.—For sewers for parish of Lambeth. Mr. Hugh McIntosh, surveyor:—

	£	s.	d.
Crockett	£13500	0	0
Dickinson & Oliver	12290	0	0
Brown	11966	0	0
Jackson	11900	0	0
Morris	10600	0	0
Blackmore	10073	0	0
Pearson	9710	0	0
Hibbard	9700	0	0
Goodair	9350	0	0
Wigmore	8999	10	0
Ritzon	8900	0	0
Mayo	8499	0	0
Carter	7895	0	0

◆

CONTRACTS OPEN FOR BUILDING ESTIMATES.

PORTSMOUTH DRAINAGE WORKS, Oct. 15.—Contract No. 10.—For laying down, constructing, and completely finishing, also for maintaining the same for twelve calendar months after completion, various brick, pipe, and cast-iron drains, for the purpose of conveying the storm-water into the harbour now discharged into the moats and mill-dam. S. J. Elliott, Clerk to the Local Board.

S. MARY ABBOTT'S, KENSINGTON, Oct. 11.—For the erection of a dispensary, relief office, and work rooms, at Notting-hill. Reuben Green, Clerk to the Guardians, 1, Devonshire-terrace, Wright's-lane, Kensington.

ULSTER, IRELAND, Oct. 19.—For the erection of a branch bank at Granard. The Manager, Ulster Bank, Granard.

GREAT EASTERN RAILWAY COMPANY, Oct. 16.—For the purchase of old scrap iron, &c. J. B. Owen, secretary, Bishopsgate Terminus, London, N.E.

HALLIWELL, BOLTON-LE-MOORS, Oct. 17.—For building a new church at Halliwell. Rev. Arthur Packer, the Vicarage, Halliwell. Architects, Messrs. Payley and Austin, Lancaster.

BRADFORD WATERWORKS, Oct. 17.—For making a tunnel about 4,000ft. long, with certain wells, conduits, and other works connected therewith, at Denholme and Oxenhope. Town Clerk, Corporation Offices, Bradford.

BISHOP'S CASTLE HIGHWAY DISTRICT, Oct. 14.—The Highway Board of the said District will consider any tenders that may be forwarded to them for the erection of four bridges in the parish of Bucknell, in the county of Salop. Plans and specifications are deposited for inspection at the house of Mr. John Lord, in the said village of Bucknell. Persons desirous of contracting are requested to send in tenders for each bridge separately, and an alternative tender for the erection of the whole. Messrs. Pardoe and Newill, Clerks, Bishop's Castle.

BRIGHTON, Oct. 31.—For the construction of the intercepting and outfall sewers. David Black, Clerk to the Board, *pro. tem.*, Town Hall, Brighton.

DEWSBURY, Oct. 14.—For the various works required in the erection of four houses and shop. John Hall, architect, &c., Leeds.

◆

BANKRUPTS.

(TO SURRENDER IN THE COUNTRY).

John Lawson, jun., Whitstable, builder, Oct. 31.

PUBLIC EXAMINATION.—ACT, 1869.

Oct. 17, W. Brown, Liverpool, painter.—Oct. 19, J. Hessian, Birmingham, timber dealer.—Oct. 24, J. Smith, Blackburn, stone merchant.—Oct. 25, M. Carter, Hartlepool, builder,

DIVIDEND MEETINGS.

Oct. 10, S. Cochran and J. Parker, Chorton-upon-Medlock, builders.—Oct. 18, G. Harvey, Leigh, Essex, plumber.

DECLARATION OF DIVIDEND.

David Terry, Whitwood, near Castleford, builder, div. 4s,

SCOTCH SEQUESTRATION.

William and James Davidson, Nairn, builders, Oct. 13.

◆

PARTNERSHIPS DISSOLVED.

Davidson and Scamell, London-street, Fenchurch-street, civil engineers.—Gardiner and Bell, Great Russell-street, St. Giles-in-the-Fields, architects and surveyors.—G. and J. Holiday, Kendal, joiners.—Bryan and Jolley, Burnley, engineers.—Kenyon and Co., Leeds, engineers.

BATH STONE OF BEST QUALITY.

RANDELL, SAUNDERS, and COMPANY, LIMITED. Quarrymen and Stone Merchants, Bath. List of Prices at the Quarries and Depots; also cost for Transit to any part of the United Kingdom, furnished on application.

BATH STONE OFFICE,
Corsham, Wilts.

[ADVT.]

CHEAP SECTIONAL

TRACING AND DRAWING PAPERS AND NOTE BOOKS. Messrs. LETTS, SON & Co., New Cross, have pleasure in submitting to mechanics, designers, and engineers, a very cheap series of "Sectional" Papers, &c., on which plans can be drawn to scale and coloured, without the ruled lines showing objectionably through the work. They are ruled in squares, 1-10 1-5, 1-6, 1-3, and 1-8 inches, increasing by eighths to 1 inch. Specimens and prices forwarded without charge, on receipt of stamped addressed envelope.

ARCHITECTURAL PHOTOGRAPHS & BOOKS.

A Set of 8 PHOTOGRAPHS (mounted in cardboard), from the original drawings of the PRIZE DESIGN of the MANCHESTER TOWN HALL competition. Size of the photograph 12 by 10. Price £2 2s.

A LITHOGRAPH of the HOTEL DE VILLE AT HAMBURGH (the prize design), by G. G. SCOTT, Esq., Architect. £1 1s.

A PHOTOGRAPH (mounted on cardboard) of the ASSIZE COURTS AT MANCHESTER by A. WATERHOUSE, Esq. Architect. Size of the photograph 26 by 21. £1 1s.

The above, being very suggestive designs, would be useful to all first-clas offices.

EXECUTED EXAMPLES OF CHURCHES, CHAPELS, MANSIONS, and VILLAS, to be completed in Five Divisions, at 10s. 6d. each. The first and second divisions only just out.

These examples are by different architects, and they contain the actual cost of each building, and the materials used, together with the ground and chamber plans.

CHURCHES and CHAPELS erected by G BIDLAKE, Esq., Architect, Wolverhampton, with the plans and the actual cost of each erection, together with the best arrangements of the seats, both in the gallery and the ground floor. 12s. 6d.

This little book is quite a favourite with the profession on account of the well-known ability of the architect in designing and carrying out the different Nonconformist Chapels and Schools Houses, &c., in different parts of England.

The above Photographs and Books can be had from the Publisher, S. BIRBECK, Bookseller, 10, Church-street, Lozells-road, Birmingham.

By THOMAS MORRIS, Architect.

A HOUSE FOR THE SUBURBS, Socially and Architecturally Sketched, with a Prefatory Glance at the Great City. Third Edition, with Designs, 12s. 6d. How to Value, Claim, Protect.

A CLUE TO RAILWAY AND OTHER Compensation for Property and Person, the Nature and Value of Estates, and Principles of Parochial Assessment 4s. 6d.

A DISCOURSE upon DILAPIDATIONS, Ecclesiastical and General their Nature and the Principles of Assessment succinctly demonstrated. With Appendix on Party-walls, &c., 4s.

A POPULAR OUTLINE of PERSPECTIVE or Graphic Projection, Parallel, Diagonal, Pan-angular, Graceful, 3s. 6d.

London: SIMPKIN, MARSHALL, and CO.

ARCHITECTURAL DRAWINGS by WILLIAM BURGES. This work will be ready for publication in about six weeks' time. The subscription list, in which there remain fifty vacancies, will go to press at the end of this month. Subscribers' names will be received by Mr. W. Burges, 15, Buckingham-street, Strand, W.C.

On Saturday next, in crown 8vo., with 150 woodcuts, price 10s. 6d. cloth,

A RUDIMENTARY MANUAL OF ARCHITECTURE: being a Concise History and Explanation of the principal Styles of European Architecture, Ancient, Mediæval, and Renaissance; with their chief variations described and illustrated. To which is appended a Glossary of Technical Terms. By THOMAS MITCHELL, Author of "The Stepping Stone to Architecture."

London: LONGMANS, GREEN & CO, Paternoster-row.

THE TRADES' ACUMEN: a Table for readily Ascertaining the number of yards, feet inches, and parts in anything that requires Measuring. No trade shou'd be without it. Post free for 13 stamps.

Published and sold by S. FUNKENSZTEIN, 25, Great Queen-street, Holborn.

PATENT WROUGHT NAILS.

TRADE MARK.

J. J. CORDES & CO.,
the Patentees and Manufacturers of the well-known
PATENT WROUGHT NAILS
(Commonly called EWBANK'S NAILS),

Desire to make it known that they have adopted a "star" or "cross," as their Trade Mark, and that all Nails now made and sent out by them, except Clasp, bear this mark upon their heads, and that within every package sent from their works is also placed a card bearing their name and address. All their bags are also branded CORDES and Co.

The Nails are manufactured by J. J. CORDES and Co. out of Scrap and the best kinds of Pig Iron, and have long since earned the reputation of being superior to all others. The Nails are all uniform in make and quality, each one perfect, and count out full 1,000 to the M.

DOS WORKS, NEWPORT, MON.

C. H. DAVIES and CO.'S
GENUINE AND ARTISTIC
SOLID PARQUET FLOORS.
N.B.—Designers and Practical Joiners.
CAMBRIDGE HALL, NEWMAN STREET,
LONDON.

THE
ENGLISH MECHANIC
AND WORLD OF SCIENCE.
WITH WHICH ARE INCORPORATED
"The Mechanic," "Scientific Opinion," and
"The British and Foreign Mechanic."
PRICE TWOPENCE WEEKLY.

OFFICE—31, TAVISTOCK-STREET, COVENT-GARDEN.
And all Booksellers and Newsagents.

LIVERPOOL VICTORIA LEGAL FRIENDLY SOCIETY.

ESTABLISHED MARCH, 1843.

Chief Office:—23, Islington, Liverpool.
London Office:—3, Commercial-street, Shoreditch.

This Society has been in active operation for 26 years, and takes rank with the very first institutions of its kind.

Claims paid £142,936
Paid-up Capital 26,945
Saved last 12 months 7,424

Wanted, a few energetic Agents and Collectors.
Rules, prospectuses, and any information can be obtained of
J. JONES London Manager.

£50,000 READY to be ADVANCED by the
TEMPERANCE PERMANENT LAND AND BUILDING SOCIETY,
ON FREEHOLD AND LEASEHOLD PROPERTY.

For any period of years not exceeding fifteen, the mortgage being redeemable by equal monthly instalments. Interest (in addition to a small premium) 5 per cent. on the balance each year. Apply to
HENRY J. PHILLIPS, Secretary.

Offices—4, Ludgate-hill, London, E.C.

NOTE.—More than One Million and a Quarter Pounds Sterling have been advanced upon house property alone.

PORTLAND CEMENT
GUARANTEED.

The PORTLAND CEMENT manufactured by Messrs. Peters Bros., on their Wouldham Hall Estate, on the River Medway, near Rochester, Kent, supplied to Her Majesty's Government, Chatham Dockyard Extension Works, Harbour and Docks of Bermuda, Metropolitan (London) Board of Works, &c., *tested* and *proved* the *best* Portland Cement, is confidently recommended, always *guaranteed* to stand *both* tests, and "bricks" can be seen actually unbroken after having been subjected to a tensile strain of 1200lbs. to the 1½in. —700lbs. *above* the required strength.

Made from Gray Stone and Alumina, the component parts of which do not vary, this Portland Cement is always to be depended upon with certainty for *strength* and *colour*, and is free from all the defects of Common Chalk and Lias-made *non-guaranteed* Portland Cements, in which no confidence can be placed, and have proved to be in some instances no better than Common Limes.

Messrs. Peters Bros. have great pleasure in informing their friends that they have completed their Extensions, the Works having now greater capabilities than any on the Medway.

ITALIAN AND OTHER MARBLES.

AYLWIN, STAMPA, & Co., CARRARA Wharf, Grosvener-road, Pimlico, S.W., and Steam Saw Mills, Auckland-street, Vauxhall, S.E., successors to B. Fabricotti, and sole agents in England for the Sale of the produce of the Messrs. FABRICOTTI'S QUARRIES, &c. at Carrara, Italy, have on Sale a well-selected stock of Statuary, Vein, Sicilian, Dove, Bardilla, Black and Gold, and other Coloured Marbles and Alabasters most in command, in Blocks, Slabs, and Tiles. Marble sawn by improved machinery, and ripped into scantlings. Powerful Steam Lathes for turning Marble, Granite, or stone columns, &c., up to 12ft. in length. Shipping orders for India and the Colonies promptly executed.

MARBLE FIGURES, VASES, &c.

AYLWIN, STAMPA, & Co. ARE ENabled to execute with the greatest facility and economy orders for Figures suitable for Gallery, Monumental, and Garden purposes, as well as all other descriptions of Decorative Sculpture work. in both Statuary and Sicilian Marble. Sculptors own Models worked in Marble. Solid Marble Baths, Mortars, Vases, &c., kept in stock at Carrara Wharf, Grosvenor-road, Pimlico, S.W.

LEROY'S IMPROVED PATENT NON-CONDUCTING COMPOSITION for COATING BOILERS, STEAM PIPES, and other highly heated surfaces. Much superior to Felt, or any other composition as regards Economy, Lightness, Durability, Adhesiveness, and Effectiveness, to prevent the radiation of Heat, save Fuel, increase the power of steam, and keep the Stoke Hole and Engine Room cool; it will at once show a leak; it cannot catch or communicate fire. Used by H.M. Government in the Dockyards, &c., &c. Hundreds of references and testimonials, and all information at F. LEROY and CO.'s, Sole Manufacturers, 12, Gray-street, near Philpot-street, Commercial-road, E.

MORTAR MILLS AND PORTABLE STEAM ENGINES FOR SALE OR HIRE.—Stationary and Donkey Engines, Steam Pans, Cornish and other Boilers, Furnace Work, Safety Valves, Steam and Water Gauges, Pumps, Tanks, Shafting, Coupling, Plummer Blocks, Riggers Fly-wheels, Edge Runners, Hydraulic and Screw Presses, Punching and Shearing Machines, Hydro extractors, Saw-frames and Benches, Crabs, Jacks, Blocks and other useful machinery.—T. T. TAYLOR, 41, White-street, Borough.

N.B.—Plant and Machinery Purchased. (Cash)

ROYAL POLYTECHNIC.—The accomplished PRAEGER FAMILY (six in number) have arrived from Copenhagen, and will give their refined and Elegant CONCERTS daily at half-past 3 and 8, commencing Monday, October 3rd.—Professor Pepper is preparing an elaborate Lecture Entertainment ON THE PRESENT WAR, and the Implements of Destruction used thereat.—The GHOST at quarter to 3 and quarter-past 7.

JOSEPH GILLOTT'S
STEEL PENS.
Sold by all Dealers throughout the World.

THE BUILDING NEWS.

◆

LONDON, FRIDAY, OCTOBER 14, 1870.

THE QUEEN ANNE MANIA.

THE race of Fashion has led men as well as women, in modern times, through some strange vagaries, and architects have succumbed to quite their share of such fooleries. It is seldom, however, that any phase has failed of finding some good *raison d'etre*, at least during the early period of its existence. It has probably been but a reaction from some previous extravagance with which society had become satiated, and was reasonable enough until it, in its turn, broke its proper bounds and became extravagant likewise. Ample grounds could be alleged for the introduction of crinoline, but when it became too ample equally just appeared those advanced for its discontinuance. So the poke-bonnet of the Quakeress, and the mere butterfly perched on the fair head of the girl of the period, as if in derision of any supposed need for a covering, might each lay claim to have much to say for themselves. The difficulty is to find the *juste milieu*, and were that found, then there would be another difficulty in getting people to be content with it for longer than its own short day: Of each architectural fashion, in like manner, much has been written both for and against, with no very varying amount of truth in the arguments; the doughty champions on each side being only wrong in persisting to look solely at the side of the shield next to himself.

We speak of course of the successive phases that have flourished and passed away since architecture proper died and eclecticism took its place. While the former lived it changed often quite as quickly, but men stopped not then to reason of what they did or proposed to do. When, however, the word Renaissance was invented, men began to study the matter as a science, and reasoned out what they should do, and consequently fell into confusion and disagreement at once, chasing one half-truth after another like will-o'-the-wisps. An impartial review of the mighty warfare that has long been waged by the adherents of the Greek and Gothic schools of recent times would be amusing, and the candid critic would probably come to acknowledge that both were right and wrong as well, and to see that the implacable antagonists were worthy but one-sided individuals, just as a calm historian of our Revolution can now concede to the memory of Royalists and Roundheads alike.

Throughout the recent changes of fashion in architecture we may note with pleasure a continuous excellent motive directing the movers thereof. How true and pure, for instance, were the principles of the intelligent revivalists of Greek art at the time of Stuart and Revitt? Did they not rightly give their adhesion to the refined laws of beauty that they discovered in the Athenian architectural remains? Was not the re-action which they commenced against the low character of work in vogue in their day a healthy one? It was only when their principles were strained to an extravagant point that they gave way,—when pediments and porticoes were stuck in front of every country house to darken the windows and give no shelter in return,—that the application of Greek architecture to English buildings became absurd. The manly and bold protest to this abuse of a good thing which Pugin inaugurated, again, had much to recommend it. Truth and honesty in construction was a good watchword in his mouth, and again and again have more recent reformers striven to bring modern Gothic into a more directly utilitarian path.

The cry for strict utilitarianism has brought another fashion into vogue—a strange one to most people's fancy at the first, and certainly one that seems liable sooner than most of the vagaries we have noticed to lapse into its extravagant stage. We refer to what we have termed at the head of our article "The Queen Anne Mania." We happen to have before us a curious collection of documents which throw some light upon its earliest stages and subsequent history—a Sibylline series of aphorisms sent to us some years since at varied intervals of time by a warm expounder of the cause. We shall refer to them again, but would first note what we can recollect of previous quiverings of the Gothic earth-crust from the pent-up smouldering fire below. "Ye Pointed arch is the origin of all evil" was an inscription which greeted us over the sported oak of a sceptical friend many years ago, and we took some trouble to try to ascertain what, in the opinion of this scoffer, was the opposite principle—the origin of all good—but we failed to gain a definite reply. Perfection seemed to be attained in his ideas by a round hole in a blank expanse of wall—contrast and breadth being the only side of the shield then exposed to his organs of vision. We have watched with some care the development of this round-hole style, but are forced to own that its outcome is as yet concealed from us.

The Queen Anne Mania is of somewhat more recent date, but of parallel progression. A calm review of the historic style we have alluded to, of the edifices of the reign of Queen Anne, and of their ornamentation and the details of their furnishing, has forced upon some candid minds a recognition of the fact that they possess many admirable qualities—not contrast and breadth particularly, but delicacy and what is called domesticity, or our old friend utilitarianism in another guise. Modern Gothic has been weighed by the said candid minds and found wanting, nay, convicted in more than one case of even vulgarity and coarseness. It is true that from the coarseness paraded and gloried in at the Strand Music Hall, for instance, the higher school of Mediævalists were free, but yet much mud rightly thrown at such works had rebounded and more or less bespattered them. A re-action seemed called for; the spindle legs of Queen Anne's tables and chairs displayed markedly the very opposite qualities, and, moreover, their transcendent excellence had already been consecrated by the approval of the very highest artist authority of the age. The fashion first set in for Queen Anne's furniture, and the vernacular Gothic attempts in the same direction were voted clumsy in comparison, and more suited for execution in stone than in wood. Afterwards the decorative parts of the houses of that date came in for much just approbation,—the delicate plaster-work of the ceilings, the admirable marble chimney-pieces, the wrought-iron gateways, and the balustrades to the staircases of the same material. Subsequently the fabrics of the houses themselves came in for their share, and, we think, for more than their share of attention. Certainly, as compared with the dreary rows of houses, such as Harley-street and the like, and modern speculating-builder's work, the old mansions in Queen's-square show to advantage, but the praise lavished upon them was too indiscriminating. Not only the general proportions, but even the sash-frames brought to the surface of the walling, was found to be full of tone, and the "Building Act" was abused for prohibiting this feature for its danger in case of fire to neighbouring tenements. Not only the grand old hood-like pulpit sounding-boards over the doorways were admired, but even the thick sashbars that cut up all the window openings into the semblance of a gridiron were asserted to be essential, the modern practice of using plate glass in large sheets being said to be "an invention of the devil."

The first houses that we have seen erected on this new theory seemed to combine some Mediæval elements with those of Queen Anne, and narrow lanky windows were made still lankier by a Pointed arch over them, the space between it and the lintel being filled in solid, and whether or no the Pointed arch be an emanation from below, the combination referred to might well be. In the more recent improved efforts of the style all these lingering hankerings after the fleshpots of Gothic tradition are boldly abandoned, and the buildings are allowed to grow, without forethought as regards composition, in the faith that the higgledy-piggledy result, if constructed in red brick with red tile roof, must prove a thing of beauty, which should be a joy for ever. Some element of decay and discord, however, must mingle with all things mundane, and it must be a source of chagrin to the architect that when the first enthusiastic tenant has departed, the next will assuredly long for more light, or object to receiving it through a gridiron, and remorselessly cut away the clumsy sashbars and mar the thing of beauty. Of course the innovator may be consigned to purgatory, whence, or from some deeper place, he is supposed to draw the sheets of plate glass he proposes to substitute, and the architect may console himself with the reflection that he is not the first martyr that has piped to heedless children in the market-place. We, as unprejudiced observers, must, however, suggest that though the age possibly should bow to the art in practice, the art always must bow to the age.

It was with some curiosity that while passing the other day a locality in which we knew that a friend had had a new house erected in this particular fashion, that we undertook to search for it, and seeing an odd-looking pile of buildings of the orthodox materials and colour we advanced towards it, but the higgledy-piggledy effect was so exactly what might have grown by additions in the course of years, and the absence of all composition or design, which we are accustomed to at the hands of architects, was so marked as to make us hesitate for fear of making a mistake. Long did we debate whether it was an old house new pointed or a new house old-fashioned, and only at last were convinced by seeing an uumistakeable look of newness about the shrunk panels of the doors.

Now, as one of the remarks passed upon the Mediæval school by the adherents of the new is that it is attempting to revive what is past and buried, and can never be resuscitated, may not the *tu quoque* argument be legitimately retorted? And with all the merits, and they are many, of the old houses of the time of Queen Anne, or that of the Adams, we do not think that they are equal to those of the best ages of Gothic, and that if the labour spent in reviving the latter is to prove vain, *a fortiori*, in our opinion, is that now being devoted in setting up once more the former as precedents to be copied.

◆

"A RUDIMENTARY MANUAL OF ARCHITECTURE."[*]

THIS modest compilation by an amateur from various architectural authorities will be found very useful as a book of reference by those who desire to know something of the subject, and it may safely be recommended to fill a vacant space on the shelves of the English gentleman's library. It takes a wider range than the manuals of Bloxam or Paley, from which otherwise it does not differ materially in character, and the elementary student will glean from it a somewhat more connected idea of the successive styles than from those works which were specially devoted to the Mediæval development of the art. Nevertheless, we do not quite see the necessity for its publication. There is avowedly nothing novel in it, and it fulfils no want that earlier books have not more fully provided for. The illustrations, we are told in the preface, are engraved expressly for this work from Nicholson, Britton, Bloxam, and the "Oxford Glossary," and that the rest are from Gwilt's "Encyclopædia;" so that unless the selection has been made with a different purpose their repetition is useless, except to those who are unable to consult the works above named. Now, we have been unable to perceive in the selection any other purpose than to give a chronological series of specimens which has been far more thoroughly done in Fergusson's Handbook and History, and in Bloxam, Paley, and others, as far as the details of the special styles treated of by them.

---

[*] "A Rudimentary Manual of Architecture," &c. By Thomas Mitchell, Author of "The Stepping-stone to Architecture." London: Longmans, Green, & Co., Paternoster-row.

Then, again, architecture is not presented in the explanatory text in a more popular and less technical manner than before, nor are its principles more lucidly set forth, so that the most we feel justly able to say for the work before us is that it is a useful little manual for reference for those who may not happen to possess one, and while it is less cumbrous and expensive than "The History of Architecture" by Fergusson, less profound and argumentative than Freeman's, and more comprehensive than either Bloxam's or Paley's, it does not occupy any field that has not been already better treated by one or other of those authors.

A want that yet remains unsatisfied is such a popular explanation of the principles of architecture as an art as may attract the cultivated portion of the public to devote a proper share of their attention to an object with which they are necessarily so intimately connected—such a work as may lead them to understand and look for beauty in the buildings around them. This want Mr. Ruskin recognised, and strove not altogether unsuccessfully to provide for; but his works are too elaborate and too fanciful for the general reader, and his aim has been the elucidation of only some of the principles which should govern the art and some of the special varieties of its development. When the non-professional inquirer would learn something of the architecture of the Greeks, with whose poetry and prose he is acquainted, of whose paintings he has read glowing descriptions in their authors, and before whose sculptures he has stood in rapt admiration in our National Museum, he feels that his point has been missed when he is told that "Greek architecture is that of the column and entablature, or, reducing the terms to their simplest forms, the post and lintel or beam." Nor does he feel much enlightened by the stock elevations and technical descriptions of the several orders, but in this age of scepticism feels disposed to ask awkward questions as to the why and the wherefore of what he is apparently expected to take wholly upon trust. Take, for instance, the following dictum, that "on the top of the frieze ran the cornice, which, in the Doric order, projected considerably, and was sculptured on the under side with mutules occurring over the triglyphs, on the soffit of the corona; under the triglyphs were little triangular drops called guttæ." If the above very positive assertions conveyed any definite meaning whatever to the mind of the reader, he certainly would wish to know why the mutules crept out of sight under the cornice, and for what purpose the guttæ were pendant under the triglyphs, and what story, if they have any, they have to tell of themselves.

Mr. Mitchell's condensed descriptions of these Greek orders is technical and dry, though terse and true, and would simply tend to impress an amateur with a feeling that he knows nothing whatever of what he is assumed to be acquainted with, and, more, that it is hopeless to expect that he ever can master so arbitrary and technical a science. Now, Mr. Ruskin's method of first explaining the natural parts of a column, and carrying his reader along with him, as he treats of the base, the shaft, and the capital, what varieties of form each are capable of, before he calls upon the memory to register the arbitrary ones with which individuals have clothed them, seems to us preferable, and far more likely to rivet the attention of the student.

When we turn to the third chapter, we think the opening of it is calculated to convey an erroneous idea of Roman architecture as the successor of Greek. Mr. Mitchell says, "The genuine principle of the architecture of the ancient Romans was that of the pier and the round arch, which became, in their hands, the means of establishing a new principle of construction." That these novelties effected an important change is true, but not upon the principles of the architecture. The architecture of Rome differed from that of Greece in having no principles at all of its own, or what we, perhaps, now-a-days would call very loose ones. This, which should have been clearly pointed out at the first, is indicated afterwards in the following passages:—

> Although the Romans copied pretty closely the Greek forms and models, in one respect their work differs essentially from the Greek, and that is in the mouldings. The Roman mouldings are invariably formed of sections of circles or ellipses, which could be produced by means of compasses, &c., while the Greek mouldings can be more effectively drawn by a skilful hand.

We may note in passing that it is one of our author's assumptions that his readers know what mouldings are, whereas we should imagine that many needed a preliminary explanation on this head.

> In adopting the principle of the Greek entablature and column, the Romans placed the columns much wider apart, and built piers behind them, from which sprang an arch which helped to support the entablature in the centre. Gradually, however, the entablature and column became a more and more decorative feature, often presenting the appearance of being added on to the building for mere ornament after the structure was itself finished.

At the conclusion of this chapter Mr. Mitchell pertinently remarks:—

> When the Empire was drawing to its close, the Greek entablature began to disappear, and the arch was made the principal feature, thereby producing a consistent system of construction, forming a nucleus from which the Romanesque styles were developed. Thus, the debased Roman style, corrupted as it was from its long association with foreign forms, and owing to the disturbed state of the Empire never brought to perfection, formed the germ of a new school of architecture, adopted and developed by the Teutonic races of Europe; and, in this school the round arch formed the principle feature, both constructive and decorative, as exhibited in the Byzantine and Romanesque styles.

The sketch of Byzantine and Saracenic architecture in the fourth chapter is brief but readable, and contains some good general remarks, as the following:—

> All traces of Greek forms were lost in the adoption of Byzantine proportions, and it is the fact that the earlier buildings erected can scarcely be considered more than a debased form of Roman construction. The model of the Christian Church, instead of being confined to the rectangular basilica, approached more to a polygonal structure, the ground plan of which was in the form of a Greek cross—that is, a cross with four arms of equal length, each of these arms being mostly surmounted by its own dome, which clustered round the great cupola in the centre. These cupolas or domes were built on the principle of the arch, and were supported on semicircular arches and piers. The capitals to these pillars consisted merely of a cubical block of stone, splayed or tapered downward to fit on to the top of the pillar, and adorned by a carved representation of foliage or basket work, picked out with gold and colour. Often old Roman, Corinthian, and Composite capitals were used again, the abaci being covered with a larger stone or impost to give a larger base for the arch to spring from, as in addition to the mere downward weight of an entablatured arrangement, the columns had now to sustain the diagonal or outward pressure of the arch. The mighty central dome was usually coloured blue on the inside, and powdered with golden stars, to typify the star-besplangled canopy of the eternal heavens resting over the earthly worshippers . . . The Byzantine style was capable of much decoration, and the rich splendour of colour and abundant use of gold and mosaic adorning the interior of the dome and the interior wall surfaces rendered the interiors most gorgeous and imposing.

A description of the manner in which this style was carried out in the noble church of Santa Sophia at Constantinople, and S. Mark's at Venice, is followed by an equally glowing one of the Mosque of Cordova and the Alhambra, so that the following qualifying criticism upon Saracenic architecture was quite necessary:—

> The Moorish style, although founded upon the Roman, exhibits an inferiority in the mode of construction which is faulty in principle, and betrays a want of science in working the materials, with very little mechanical skill; altogether reducing itself to a mere system of surface decoration, plastered upon supports taken from previously constructed works, and put together in a very inferior manner, exhibiting great magnificence and richness of ornament, but having a very mixed and incongruous character.

The Romanesque style, as developed upon the Continent, is only just mentioned in the fifth chapter; but its growth in England, from the earliest specimens which were erected during the Anglo-Saxon period, in imitation of those of Normandy, and the complete Anglo-Norman style, is intelligently described, as also the rise, progress, and decline of Gothic, and the pages are interspersed with woodcuts of the more prominent features of each, taken from the sources we have mentioned. We are unable, however, to discern any original treatment of the subject, or any superior classification to that of former well-known architectural manuals. The twelfth and last chapter treats of the Renaissance, Modern Italian orders, and modern architecture; the idea of this, not a bad one, being a sort of condensation of Mr. Fergusson's voluminous treatise on the subject. Although perhaps the least useful to the inquiring amateur, it is at any rate the most interesting to those who have mastered the elements of the styles. The Florentine, Roman, and Venetian varieties of the revived Italian style are described and illustrated, and the introduction into England of the Renaissance by Inigo Jones and Sir Christopher Wren, and others, and their defects as well as merits, are fairly pointed out. Then the fashion for Greek, which supervened at the close of the eighteenth century, is touched upon. The inapplicability of the latter to our climate and wants, Mr. Mitchell considers, led naturally to the reaction which took place in the revival of the truer Gothic principles of construction and decoration at the hands of Pugin and others. The author's references to recent works of this Mediæval school at the conclusion of his book are somewhat arbitrary and limited, for he seems to avow himself a Gamaliel still sitting with rapt reverence at the feet of Professor Scott, and with the exception of a church by Mr. Dollman, of Upper Clapton, of which he speaks with admiration, he can only enumerate a number of the works of that architect, who, though eminent, hardly now leads the van in the opinion of the profession; and, as a climax, he winds up with a peroration applauding as "the most successful achievement of modern pointed-arched architecture the Midland Railway Station in the Euston-road," a criticism which we must beg to dispute. We now take leave of the "Rudimentary Manual" by Mr. Mitchell, with the reiteration of our opinion that though neither very novel nor original, brilliant nor discriminating, it is a creditable compendious, and useful work of an amateur

---

REPORT OF THE METROPOLITAN BOARD OF WORKS, 1869-70.

WHAT may quite possibly be the las annual report of the Metropolitan Board of Works is before us. Like its predecessors it deals only with improvement effected or effecting, and says little about th many still necessary for the health, convenience, and ornamentation of the metropolis. I is, however, but fair to remember—if only in charity to what may be an expiring Corporation, that the Board during its fifteen years' existence has accomplished a great deal of good work for the Metropolis. "Main Drainage," "Thames Embankment," "Finsbury Park," and "Southwark Park," which stand in the Report as the titles of some of its sections, conveyed to our minds a dozen years back only half formed ideas of projected improvements, which in "the good time coming" would some day or another be carried out. They are now accomplished facts, and are due to the labours of the Board of Works.

The Report for 1869-70 principally deals with improvements or works already begun. Numbers of additional sewers and drains have been constructed, the organization of the Fire Brigade has been further perfected, and the important questions of Gas and Water Supply have occupied the attention of the Board. The results effected in all the above are well-known to our readers, and need no further reference. Among the failures of the year may be noticed the "Metropolitan Buildings and Management Bill," which from the pressure of business never reached a second reading—that is, was withdrawn by Sir William Tite in face of the strong opposition which evidently awaited it. A hope is expressed that the Government may next session take the Bill under their protection and pass it through Parliament. One matter at present engrossing the attention of the Board is the acquisition for the public of Hampstead Heath. The death of the late unbending lord of the manor, Sir T. M. Wilson, has smoothed the way, and negotiations are now being carried on with his successor, which it is to be hoped may turn out successful.

Glancing at the continued progress of the Thames Embankment towards completion, we take the table of contents of materials used in its construction, which from their magnitude deserve record :—

Granite	650,000	cubic feet.
Brickwork	80,000	cubic yards.
Concrete	140,000	"
Timber (for cofferdam, &c.)	500,000	cubic feet.
Caissons (for ditto)	2,500	tons.
Earth filling	1,000,000	cubic feet.
Excavation	144,000	"
York paving	125,000	superficial feet.
Broken granite	50,000	superficial yards

◆

IMPROVED AND OLD-FASHIONED HOUSE BUILDING.

If there be one thing more than another which may be said to characterise the day in which we live, it is the universal idea in the minds of everybody that all things are in a state of rapid and progressive and continuous *improvement. House building*, more particularly, is now-a-days thought to be in a course of improvement so marked, indeed, that not only are the general arrangements of houses better than ever they were, but all the details of house building are growing apace, all artificial materials used in the putting together of houses are getting both cheaper and better adapted for their purpose, and sounder and more lasting —in short, that house building, like everything else, is progressing, and that the house building of to-day is an advance on that of twenty-five or fifty years ago. But there is nothing like eyesight.

All have heard or read of the disastrous fire but a few days back in the regions of Shoreditch, behind the church, among the bye-streets and among its "poor slave households." It was a very great fire, and nearly burnt out a whole block or square of buildings, bounded on its four sides by narrow streets which the houses overlooked; and should anybody want to see what an "Uhlan" ridden and burnt-out village in poor France now looks like, this Shoreditch bit of London is the place to go to and see it. There are huge piles of burnt timber, houses gutted and partially burnt out, broken furniture lying about in all directions, trees scorched up and withered by the heat from the burning timber, all the little gardens at the backs of the houses trodden into mud,—in short, a scene of destruction and ruin generally, which, on a small scale, may give a feeble idea of what a French burnt village looks like after a German raid.

But our present purpose is more immediately, and to which this scene will lead us, with house building as it existed when these houses were built, and for this purpose we would more especially refer to the row of houses which front Newcastle-street, and which suffered but partially. Like so many of the houses in this region of weavers, these houses seem to have been constructed especially for silk weavers, and provision has therefore been made in them for the loom and other implements of the trade before the coming in of the present all-absorbing silk-weaving machinery, which is, of course, driving all hand work out of the world. Nothing can be more pleasantly convenient than the mode in which these houses have been built for the purposes which they are to subserve. We spent some hours in one of these poor slave houses, and carefully examined every part of it for the purpose of finding out, if possible, what "improvements" and progress have been effected in house building since the days when George the Fourth was king. Let it be observed, therefore, that these out-of-the-world houses do not contain *one single* item of improved methods of building, or construction, or material; that everything in them is out of date; and that they would, we may suppose, be one and all condemned by any orthodox district surveyor. We take the house at the corner of Newcastle-street, abutting on the dead wall at the end of it, because, as it would seem, it stands a fair chance of being pulled down (one cannot see why), and because, for the small charge of one penny, to help the unfortunate inmates, you can see all over it at leisure. These houses, as we have said, were designed specially for *silk weavers*, and the best and more important room in the house is consequently that devoted to the reception of the looms and other apparatus used in silk weaving. This is the second floor; the one room taking up the whole space from front wall to back wall, with two long windows reaching nearly across the room, one on either end of it. This is for the purpose of affording sufficient light for the workman. The fireplace is near to the centre of the wall opposite the staircase, and contains in this particular room one of those very convenient old-fashioned grates, with semicircular bottom, in which a *small* fire can always be kept in without consuming too much fuel, yet does not go out, which it always does in a common and *improved* flat-bottomed grate. No space is lost by a staircase landing and door, for you enter the room through the opening in the floor made for the stairs. The size of these rooms is about 14ft. by 15 or 16ft. It would be difficult to contrive a more convenient and cheerful room, and shows how much is to be got by a double window, for if the sun does happen to shine you are sure to see it, so that a room thus contrived and lighted can never be dull while there be but the smallest glimmer of brightness outside. Of course it will be understood that while one window fronts the street the other looks into the garden ground enclosed by the blocks of houses, for improvement in this region has not yet gone so far as to convert these few yards of grass, flowers, weeds, and stunted trees, and wooden palings, into dead walls and stone paved yards; for as we have observed, there is no improved building here as yet, and the Board of Works do not seem to have scented it out, altered the names of the streets, pulled down as much as possible, and destroyed all the little character that the place now has, little though it be.

The principal room thus devoted to trade purposes regulates the arrangement of the rest of the house, which it is perhaps unnecessary to describe at any length; but it may be noticed that the loft above this main room, and in the roof, is utilised in all the houses, and is either workshop or bedroom, the staircase to it being the narrowest we ever remember to have seen. The main staircase is in the middle of the house, and thus divides it into two, with front and back rooms, both of them being good sized rooms, no space being cut off from one of them, as in the ordinary way, by the whole width of the staircase being deducted from one of them. Is not this, we may ask, a better plan of house designing than when all the back rooms are sacrificed for the staircase, and made so diminutive to make room for it? One quaint peculiarity must not be passed over in this note on house building, for the simple reason that it is not to be found in improved modern dwellings for the labouring poor, not even in the inconvenient and smart Peabody blocks of buildings; we refer to those matter-of-fact but most useful things called cupboards. In these houses there really seem to be no end of them, they are met at every turn and every corner, and the staircase contains a perfect nest of them, large and small. Dickens himself would have quite revelled in this house and its cupboards, and there is really no saying what he would not have put in them, or got out of them—not excluding ghosts. When every floor, as in this case, is let out to a separate household, these cupboards are a necessity, and surely it cannot be said to be an improvement when they are left out. One thing or two more. Happily for the inhabitants, there are no patent slate cisterns holding about a pan or so of water, the old "water-butt" seeming to do very well in the place of it; the butts standing a few inches from the ground, so as to be readily got at and cleaned, and being open at the top, you at least know whether they are full or no, and can see as to the cleanliness and purity of the water. It may be noted, too, that the closets are out of the houses; the trifling inconvenience resulting from such an arrangement is as nothing compared to a foul-smelling patented contrivance in the very centre of the house, and from which you cannot escape. Let it be again observed that in this out of the way and poverty-stricken part of London—Shoreditch, Mile-end, and Spitalfields—holding, as it does, so dense a population of working people, there has not been that rage for improvements which has fallen to the lot of this more fortunate "west-end," so that things are in a more primitive, and, so to phrase it, natural state; but if any one, professional architect, builder, or otherwise, will be at the trouble of comparing one of these humble but convenient houses for weavers with any complete suite of rooms on the model lodging-house plan for the labouring poor, it is just likely that he, the said professional, might prefer the model lodging-house more improved and perfected plan, but no one having to live in either one of the houses would or can do so. There is no comparison between them in point of comfort or convenience, or even cheerfulness, and certainly not in any artistic, or—shall we say it?—quaint interest. Of course there is none in the new model lodging-house, which is as dull and hard as a prison (see the Peabody buildings), while in the very roughness and mere attempt at convenience of these houses which we have described, there is, as we have said, at least a quaint interest, if nothing more—convenience certainly, and even size. With all our present boasting, therefore, of progressive methods, what has been the gain during the last fifty years in common house building? What new thing, or arrangement, or material, or apparatus is there which can be put forward as a better thing than what is to found even in this poor neighbourhood of the Spitalfields silk-weavers? After better than a good half-century of art and science teaching and experience in house building, and almost no end of new materials and new patent contrivances, we will defy any one, professional or no, to point out a better human habitation than this poor broken-down and now condemned (why condemned ?) silk-weaver's house. But there is yet one most practical consideration which we would urge on those who have houses to build out of the region of silk weaving, but in that of silk wearing. It is this. Every one knows that the drawing-room is the main and principal room in every house claiming aristocratic or even genteel proportions, and that whatever the rest of the house may be like, or however it may be furnished, the drawing room is not neglected ; indeed, it is the chief care of those who centre all their ambition in their house, and no expense is spared in making it the envy and sometimes the despair of neighbours. Commonly the dull architect of the house, when it happens to have had any, or the speculating builder, has marred all at the outset, for by dividing the space taken up by the two rooms, front and back drawing-room, into two instead of having it as one apartment, and by putting the staircase into the back room, the whole grand idea of a drawing, or reception, or company room is at once destroyed. We are of course now speaking of of the better class of town houses, wherein the drawing-room is a necessity, and consequently used as such. It is a subject not a little curious, that of drawing-rooms, for the time was, in primitive and dark ages, when no such place had any existence or was ever thought of or wanted; but of modern fashionable and well-to-do existence it is—one may fairly say it—the ultimate end, no one can go any further. To have a grand finely-furnished drawing-room, and to every now and then fill it with fashionably dressed company, is the *ultima thule* of modern life. Why not, then, make the most of the idea, such as it is, and lay out the fashionable house, beginning with the drawing-room. To do this well and effectually there is no better or so good a way as to copy the humble arrangements of a Spitalfields weaver's second-floor front and back so cleverly thrown into one. C. B. A.

◆

THE HISTORICAL DEVELOPMENT OF ORNAMENTAL ART.

DR. G. G. ZERFFI delivered the first of a course of forty lectures on the above subject in the lecture-theatre at the South Kensington Museum, on Tuesday afternoon last. In these lectures the subject is to be treated with special reference to different styles. In his opening remarks the lecturer said : Gazing up into the starry heavens, we shall see there, besides the millions of sparkling worlds floating in space, an immense quantity of nebulæ, shining dimly. These nebulæ are either decayed systems of worlds, once compact and well regulated, but now dispersed ; or they are worlds in course of formation, seeking, according to the general law of gravitation, to form a central body by the attraction of cosmical forces. In studying art history we shall find that the same cosmical process is continually going on in the spheres of art. Forms vanish to reappear again in entirely new combinations. Dr. Zerffi then reverted to the first course of forty lectures commenced last year, which he said he had devoted to the study of the general outlines of the subject, and to showing the outer world in connection with the intellectual world, and the connection between ideas and the products of art. In the present course he intended to fill up the gaps which he was obliged to leave in generalising, and to draw the especial attention of his audience to the particular process through which products of art have to pass in order to become what they are. He should also trace with precision the general laws according to which the special phenomena of art have been formed, look upon the isolated art products of different nations, and refer to the climates under which they lived. He should not omit to draw attention to the different degrees of religion and political and social civilisation as so many phenomenal results of certain influences, and trace these influences again to their origin and gradual development. After dwelling on the sublimity of Creation, even ages before man appeared, Dr. Zerffi remarked that it was only when by degrees man reached his proper development and became conscious of his intellectual powers, that beauty may be said to have acquired a dimension on earth, for without man capable of grasping that which is beautiful, beauty would have no existence. Science vanquishes error, industry overcomes matter, and art reproduces beauty ; but as it is man who has to perform this threefold task, man must be studied, and must be known from an ethnological point of view. Modern science likes to read history backwards, and read this way no history was so interesting as that of art, in which we are capable of tracing the gradual progress of man's capacity to produce works of art. As in Nature, so also in Art, we shall find certain types, certain fundamental forms, continually recurring, repeating themselves, and forming new combinations, always, however, using up the old materials. All these transformations and combinations take place in accordance with certain laws. He should, then, acquaint his audience during the course of these lectures with the different styles. Beauty, for this purpose, would be looked upon as an effect, and not as a mere sum total of certain causes. He should adopt the system of tracing analogies wherever occasion required it, and should try to group together what appeared to him to be the effects of similar causes. That was a field which was very much neglected, and one which was scarcely capable of being exhausted. He should dwell upon the economy of art, showing how art arises from the necessities of man, and how man ornaments not only his palaces and temples, but his every-day utensils—his spoons, his paddles, and his spears. In treating of the historical development of ornamental art he should endeavour to avoid one great mistake. At a certain period in the study of every branch of science or art, everything is treated hypothetically; during another stage everything is reduced to a realistic or technical system, which very often crushes every higher aspiration. He should try to be neither hypothetical nor technical; but he should endeavour to rouse the higher artistic feelings of his hearers to a clear and systematic understanding of artistic tendencies in general. Above all, he would try to awake within them the slumbering powers of self-creative originality. They would study, then, art for its own sake, and, in so doing, they would become really excellent practical artists. The subject before them might be treated in three different ways. Firstly, there was the realistic point of view, having nature and geometry as the basis of art; secondly, the subject could be treated from the historical point of view, showing, through antiquarian researches, the gradual development of art; and, thirdly, there was the critical aspect, influenced by speculative philosophy and æsthetics. After an analysis of these three standpoints, the lecturer proceeded to point out the laws of beauty, harmony, and symmetry, as exemplified in nature, in crystals, plants, trees, &c., and so brought an interesting and instructive lecture to a close.

These lectures, which are given by Dr. Zerffi under the auspices of the Science and Art department, will be given every Tuesday afternoon at three o'clock.

◆

THE SLAVE-CHILDREN OF THE MIDLAND COUNTIES.

"WANTED, several hundred children, of seven years of age, to carry 5½ tons of clay per day, for sixpence !" Put into such a sentence the facts to which we want to draw attention would probably awaken men's minds and consciences. If we suggested the possibility of any child with a black skin being compelled, in Virginia or South Carolina, to employ itself at the age of seven years for thirteen hours daily in carrying about forty pounds of clay on its head each journey from the clay-heap to the work-table, and, in addition thereto, being often obliged to work all night, we have little doubt but that letters from indignant readers would pour in upon us. An association with a long name and a liberally-paid staff of officers would be formed to control people over whom we can have no compulsory influence, and to prevent crimes for which we are not responsible. But as it happens to be in England that infants are thus enslaved, we quietly make up our minds to ignore the fact—at any rate to forget it as soon as possible. Yet it is as well some should *know* it. The builder should know it ; and the man who has been making money out of bricks and mortar for the last twenty years, and is about to retire on a competence,—a large part of which he has indirectly wrung from the hearts of the poor Midland Counties slave-children. The foolish operative bricklayer should know it, who strikes against the introduction of the brickmaking machine, and thus does his little best to continue the slavery. That all *may* know it if they will, we give a few facts taken from a paper read at the late Social Science Congress at Newcastle, by Mr. George Smith, of Leicester.

Personal experience has taught him sympathy for the class in whose behalf he pleads, whether that experience was a pleasant one the following extract from his paper will show :—

> When a child of about seven years of age, I was employed by a near relative to assist him in making bricks. It is not my wish to say anything against him ; but, like most of his class at that time, and like many even now, he thought kicks and blows formed the best means of obtaining the maximum of work from a lad. And, as if these were not enough, excessively long hours of labour were added. My employment consisted in continually carrying about forty pounds of clay upon my head, from the clay-heap to the table on which the bricks were made. When there was no clay, I had to carry the same weight of bricks. This labour had to be performed, almost without intermission, for *thirteen hours* daily. Sometimes my labours were increased by my having to work all night at the kilns.
>
> The results of the prolonged and severe labour to which I was subjected, combined with the cruel treatment experienced by me at the hands of the adult labourers, are shown in marks which are borne by me to this day. On one occasion I had to perform a very heavy amount of labour. After my customary day's work, I had to carry 1,200 9in. bricks from the maker to the floors on which they are placed to harden. The total distance thus walked by me that night was not less than fourteen miles, seven miles of which I traversed with eleven pounds weight of clay in my arms, besides lifting the unmade clay and carrying it some distance to the maker. The total quantity of clay thus carried by me was five and a half tons. For all this labour I received *sixpence !* The fatigue thus occasioned brought on a serious illness, which for several weeks prevented my resuming work. My reason for giving these personal experiences is that they are precisely similar to those which are being endured by large numbers of children and young persons at the present day, notwithstanding the existence of the Factory and Workshop Acts.

A light and genteel occupation for children truly, even if their education and morals do suffer ! Perhaps the less said about morals the better, in the face of one sentence of Mr. Smith's paper. He says "Out of the many hundreds of brickyard girls whose career I have personally marked, not more than half-a-dozen have become decent and respectable wives." What about the others ? There still seem to be plenty of *children* in the brickyards.

And the worst of all this is that the Act which was passed to prevent it is powerless from the almost culpable ignorance on the part of its compilers of the existence of such evils. As the law stands, yards employing less than fifty hands are exempt from the operations of the Factory Act. The majority of the brickyards do employ less than fifty hands, and consequently escape its censure. The manifest injustice and absurdity of such an exemption are obvious. Mr. Smith points to one instance in which a brickyard numbering more than fifty hands came under Government inspection. A boy under 12 years of age was prohibited working by the inspecting surgeon, and the next day was found employed in one of the smaller yards and working eighty-four hours per week.

When the evil is so very terrible, and the remedy is so very easy, will not somebody try and put a stop to this reproach to the building trades ?

◆

ARBITRATION IN THE BUILDING TRADES AT LIVERPOOL.

THE following scheme for the establishment of a public court of conciliation and arbitration has been submitted on behalf of the trades, and rejected by the Master-Builders' Association :—

> The constituency is to consist of all master-builders tradesmen, and operatives engaged in the buildin trade, or in any of its branches.
>
> The court is to be extra judicial, and to consist of a equal number of employers and employed, to be electe at an annual meeting of each body. Each branch o the building trade to send six masters and six operatives an independent president to be chosen at the firs meeting of arbitrators, and a vice-president to act i case of the illness or absence of the president.
>
> The court to be subdivided into three sections—
>
> 1. A court of conciliation, to consist of one employe and one operative to be chosen from the branch in whic the dispute has arisen.
> 2. A court of arbitration, to consist of the president six employers, and six workmen representing the branc in which the dispute has arisen.
> 3. A special court, to consist of the president, on employer, and one workman from each branch of th trade.
>
> The object of the court of conciliation shall be to con ciliate parties in whose establishment minor dispute

have arisen. Should they fail in doing so, the case to be referred to the court of arbitration.

The court of arbitration shall serve as a court of appeal from the conciliators, and for the settlement of differences which may arise in any particular branch of the trade.

The special court to be for the settlement of differences affecting the trade in all its branches, and a court of final appeal from the court of arbitration.

In bringing disputes before the conciliatory court, the parties shall appear in person, the employer being allowed to send his foreman. Should the dispute have arisen with such foreman, the proceedings should be private. Before the court of arbitration and the special court the parties may appear in person, or be represented by counsel or attorney, as in the County Court, and the proceedings should be public.

The courts shall take cognisance of all differences that may arise, but in case the subject of difference be rate of wages or hours of labour for the future, then their decision shall only be binding for six months.

In all cases the majority shall decide, and if the votes be equal, the president shall give the casting vote.

The master-builders have already agreed to the principle of arbitration to this extent—that in case of any dispute arising six employers and six workmen should constitute a court of arbitration, who, in the language of the rule, "shall have power to come to terms, and whose decision shall be binding on both parties; but, if unable to agree, they shall proceed to appoint an umpire, to be mutually agreed upon, who shall act as sole referee, and whose decision shall be the decision of the court, and shall be equally binding on both parties." The objections of the operatives to this system are—first, that it is difficult to select a man as umpire in whose decision they can place confidence; second, that there is no court of appeal from the judgment of the umpire; and third, that the arbitration proceedings are conducted in private. The difference between the men and the employers is really one of degree rather than of principle, and it is to be hoped that some satisfactory solution of the question will be arrived at. The masters especially should remember, says the *Liverpool Mercury*, that in the event of any serious disagreement arising, it would be in the power of the operatives to say that their proposition to establish a court of conciliation had been rejected.

◆

APPLICATION OF SCIENCE TO INDUSTRY.

DR. LYON PLAYFAIR, in a lecture recently delivered before the Midland Institute of Birmingham, said—"When any tribe or nation can take from another the raw material, which the last either does not use or uses with less intelligence, the first nation must be under the guidance of science. The science may be undeveloped, dealing with qualities only and not with quantities, but science it must be; for it is impressing upon the material the conception derived from a cultured intelligence, and making these of a higher relative value than the mere local possession of the material itself. This is the great element of industrial competition in the world at the present time. Take the case of Great Britain in modern days. We have in large quantities, and in fortunate proximity, coal, ironstone, and lime. We have copper, and tin, and zinc, in smaller proportion. As intelligence arose in this country, and initiatory science became evolved from industrial pursuits, the inhabitants no longer sold their mineral wealth to distant nations, but manufactured it for themselves. As long as the growing intelligence of our inhabitants equalled or exceeded that possessed by any neighbouring nation, our prosperity was secured; because, in addition to the science of the time, the raw material of industry was in our possession, and competition with us was an impossibility. And so it is with all nations. But the moment that any nation allows the intellectual element of production to fall below that of its neighbours, the local advantage no longer suffices for superiority. When commerce and science open up paths of rapid intercommunication throughout the world, the cost of transit of raw material is diminished, and the intellectual superiority of another nation far more than balances the possession of raw material. Roads, railways, ships, and steamboats, arising in the march of science, can spread raw material everywhere, and enable nations to test their relative intellectual powers applied to it. Let us take a case: Cotton, being indigenous to Hindostan, calico was made at Calicut. Soon the intellectual culture of the Arabians exceeded that of the Hindoos. Calico was manufactured by them, and introduced into Spain, where it flourished. Then came the great national crime of Spain in the beginning of the seventeenth century, when a million of the Moriscoes, who still possessed the experience in manufacturing industry, were suddenly expelled on account of their doubtful Christianity. With them, cotton, woollen, and silk manufactures were also ejected from Spain. The 15,000 looms of Seville were thus reduced to 300, and the 40,000 silk weavers of Toledo lost their subsistence as soon as the intelligence and skill of the Moors passed to Tunis. In process of time this country took up the cotton trade which Spain flung away, and made it our own by great mechanical inventions. Not, be it observed, by manual labour, but by the result of intelligence applied to machinery and locomotion. And look how much intellect now exceeds the value of the raw material as a factor in production. Cotton is grown in America, crosses the broad Atlantic as a bulky and expensive freight, is seized hold of by our mechanical science and manufacturing enterprise, crosses the Atlantic again as calico, pays a heavy import duty, and yet undersells the products of the mills at Lowell. When the great American people, through their rising colleges, and by a better understanding of the effects of restrictive tariffs, apply their intellectual powers in this direction, such relative superiority of manufacturing science will be impossible in the presence of the raw material at the door of their mills. More strange still to see Switzerland, with no seaboard and no coal, bringing cotton from America, transporting it through the defiles of the mountains, then back again over land and sea, in the form of high-priced cotton goods, underselling America in her own markets. What enables such a country to do this? It is not cheapness of labour; it is intellectual or scientific superiority in relation to the manufacture which competes successfully against local advantages. Take another instance. Sweden has excellent iron, and we send for it to Birmingham, where you convert it into tools, axes, chisels and hoes. You send these to America, though good iron ore exists in that country. Well, some day the Americans find that by giving a different edge and temper to their axes, or a different form to their hoes, they can do their own work better; so they send to Sweden for the iron, and fashion it into their peculiar forms, and Birmingham does not send so many axes and hoes as formerly, but America actually sends over some to this country, to see whether we like their new forms better than our own. You see that the mere possession of the raw material confers but a small advantage on the country, and that the changes which are continually taking place are not regulated by it. The intellect, which has such a predominant value, receives its expression, at least to a large extent, by incessant efforts to convert the brute labour of a man into an intellectual superintendence of labour performed by a machine. This may be illustrated by any branch of industry taken at random. I see opposite my study window, as I write, a house in course of erection, and the labour of the builder will serve my purpose as well as any other. An Irish hodman is carrying a quantity of bricks up a ladder, in order to supply material to the builder. The sight is familiar to us still, though not so much so as it was a few years since, because a change is passing over this form of labour. Let us study the reasons for the change. The Irish hodman is a human machine, unskilfully and expensively put into operation, He felt that himself, in his fine, confused way, when he wrote to his friend in Ireland, "Dear Pat, come over here and earn your money: there is nothing for you to do but to carry the bricks up a ladder, for there is a man at the top who takes them from you and does all the work!" The man at the top is a skilled workman, more nearly fulfilling his human functions, for he is using intellect in his work. The hodman is a worker also, but only a user of his own brute force in a very unintelligent way. Every time that he ascends the ladder with his load of bricks, he is carrying his own weight in addition to that of the bricks; his force is thus wastefully expended. After many years his employer perceives this, and substitutes human labour first by that of a horse, then by that a steam engine. Now, when you pass a house in course of erection you will see a horse trotting over a prescribed course. It is pulling up a whole barrowful of bricks by a rope and pulley. The horse, tended by one man, is doing the work of seven or eight hodmen, and with much economy of money, inasmuch as the cost of the hay and oats, from which its power is derived, scarcely exceeds that of the beef, potatoes, and beer of a single hodman; while increased economy of labour is also attained, because the weight represented by the bodies of seven hodmen is not drawn up along with the bricks. Food, burned within the bodies of the men and the horse, is in both cases the source of power. Again, in large houses the horse disappears, and a small steam engine draws up the bricks. Economy is again achieved, for the coal, which is the food of the engine, is less costly than the hay and oats required for evolution of force in the horse. A single man, using scientific knowledge in the guidance of the engine, is now doing the work of several horses or many men. Let us analyse the changes which pass over the forms of labour illustrated in this particular case. The first tendency is to substitute the brute force of a man by an intellectual superintendence of a cheaper form of force, either animal or physical, the aim being to obtain economy of production, either through economy of time or by the substitution of a cheaper form of force for human labour. In fact, economy of time generally follows the economical substitution of force. Savages have an utter disregard of time in the performance of labour. They will expend a month in sharpening a single arrow. Some of the rock crystal cylinders worn by chiefs for ornaments are stated to take two men's lives to perforate. The Kamchadals of North-eastern Asia take three years to hollow out a canoe, and one year to scoop out the trough in which they cook food. As soon as a savage tribe employs fire, instead of implements made of stone or bone, to hollow out their canoes, they are using a natural power to economise time and brute human force, and are on the high road to civilisation. In human progress it is always so, for it is a natural law that the sweat of the brow should be lessened by the conception of the brain. The economy produced by the substitution of cheaper for dearer forms of force is remarkable in all cases where it is applied. The Prussians saw this very well when they wanted to make England declare coal as contraband of war in the present campaign, that it was representative of so many men added to the enemy; for, three or four pounds of coal, even in the wasteful way in which it is used, are more than equal to a man's force. I recollect, some years since, reading an interesting address on this subject by Sir William Armstrong. When coal was first an object of commerce, it was transported on the backs of men from the pit's mouth to the sea-coast. A man in this way might carry a load of half a hundredweight; but after a time a pack-horse was substituted for the man, and carried about three hundredweight. As science progressed, the pack-horse was attached to the wheel-cart, into which its load was put, and it pulled down sixteen hundredweight. Then, as industry progressed, tram-roads were laid down between the pit and the coast, and the same horse pulling a waggon carried forty hundredweight. Finally came the great triumph of science, when coal was employed to pull itself. The smoking, snorting, iron horse, fed with coal and water, drags along the railroad 200 tons. The conversion of coal into force which produces this great result is, in point of cost, scarcely greater than that of the human beast of burden, or the pack-horse originally used for a scant result. And yet our engines are so imperfect that they only use one-tenth and waste nine-tenths of the available force in coal! The importance of the transformation may be better understood if you view the force of coal as expressed in men's power; just as we do in speaking of an engine as having so many horse-power. If human force were alone used in this country, the sum of production must be limited by the number of inhabitants. In such a case the United Kingdom could not produce more than the products of the labour of its thirty millions of inhabitants of all ages. But the coal excavated annually in this country represents in actual attainable work almost exactly the sum of the force of the whole population of the globe, viewed as adults. So that the use of a natural force, in substitution of human power, augments vastly the productive resources of our small insular kingdom, and enables it not only to supply its own wants, but also to export to other countries its superfluity of production.

◆

On Thursday week the new church of S. John the Evangelist, Accrington, was consecrated by the Bishop of Manchester. It is a Gothic building, capable of seating 880 persons, and the cost has been £6,700.

NEW ELEMENTS OF HAND-RAILING.*

(*Continued from page* 258.)

Plate 5.—Kerfing the Wall and Front Strings of Circular Stairs.

Figure 1 exhibits the plan: The front string is made by kerfing a board which is bent on curved ribs. These lap at the ends and fasten with screws, thus forming a ground to which the string is secured. The kerfs being closed show the regularity of the curve.

Clean off with compass, plane, and sand-paper. This is quite sufficient for painted work. But, in case the finish is hard wood, even then the string is ready to lay a veneer.

It may be well to stay the work with a brace or two. Let all fastening be done with screws, and not nails. The risers should be prepared to receive the string by blocks, screwed on the back, projecting below risers, to which the string is secured.

The circle should be gradually diminished, say from riser R, the object being to give a proper easing to the rail, starting from the newel. It also adds to the appearance of the stairs.

Having already explained the mode of finding the kerfs, it is now only necessary to say that E D and V 2 indicate the solid wood that stands between the kerfs.

The Stretch Out.—This has already been shown by construction, and a practical method has also been given, either of which may be adopted. Let N T, Fig. 2, equal half A H on plan. Take N and T as radius and centre. Then make intersection as shown. Draw from T the extended line. Obtain point K by method shown on last plate, which gives K T as half the stretch out of L H.

Fig. 3 shows stretch out for quarter circle of front string; the method being the same as that already given.

The letters P S indicate half of quarter circle, which is the most ready way of applying the same to the string.

Fig. 4 exhibits the wall string with its steps and risers cut in, and ready for bending.

The letters T K equal corresponding letters on the left, and indicate the stretch out of L H.

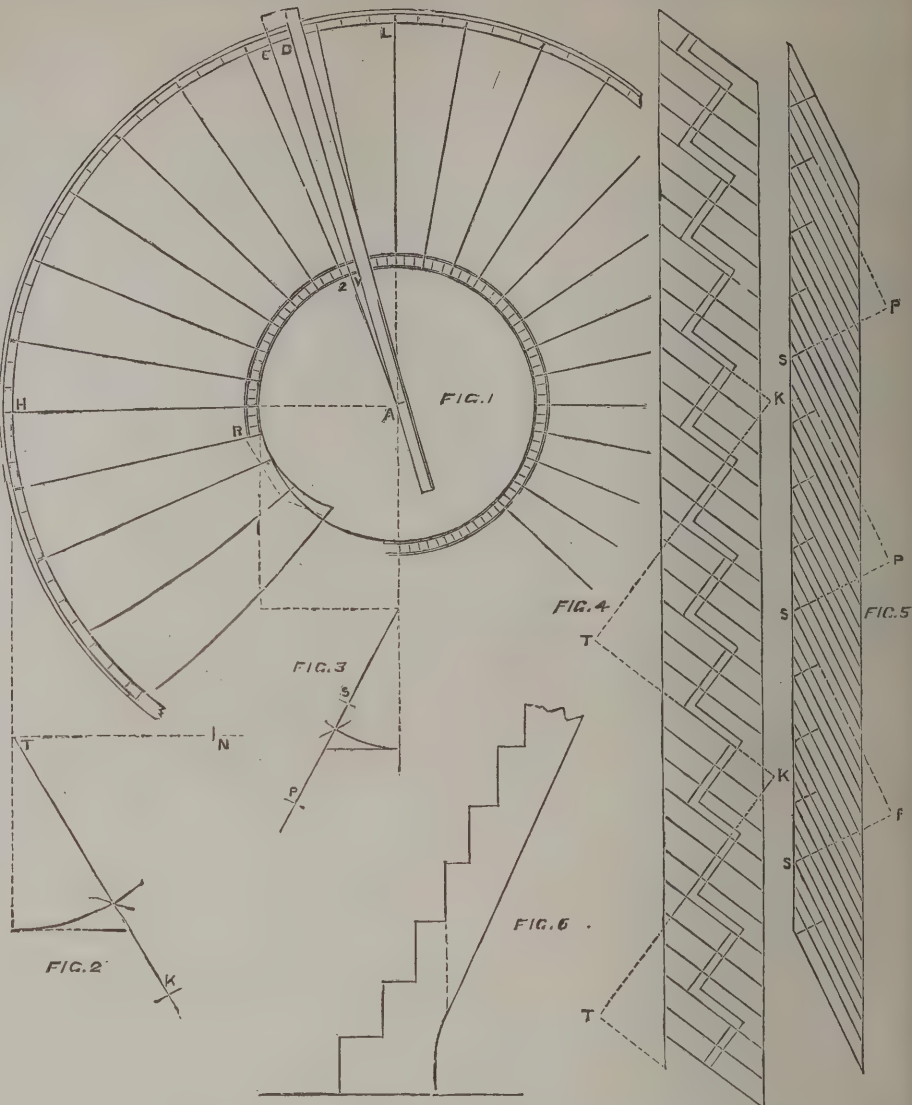
Splicing of Circular Strings.

We have already given the splicing of straight strings; the method adopted there applies here; with the difference that the splice in this case is secured by a rib, curved to agree with the plan; the joints here being plumb, and not cut at right angles with edge of string.

Fig. 5 exhibits the front string. The letters P S are equal to half the stretch out of quadrant on plan. The stuff is shown kerfed and ready to bend. It may be best to have the string screwed to a rib, the curve of which must be elliptical, for the reason it runs on the same pitch as the string, and stands over circle on the plan. This method makes solid and good work. Still, the rib might be dispensed with by carefully bending and bracing the string. Then the veneer being laid, glued, and fastened with hand-screws, is equally good, when dry.

Fig. 6 shows the starting. Here it will be best to have a portion of the string made in staves; on account of the two different curves seen on the plan.

(*To be continued.*)



NEW ELEMENTS OF HAND-RAILING.—PLATE V.

◆

ROAD ROLLING IN THE METROPOLIS.

We have just received the report of the chief surveyor of Marylebone on the use of a steam-roller in that parish. It was resolved by the Vestry that one of Aveling and Porter's steam-rollers should be hired for a month on trial. The surveyor reports that the total number of yards rolled in thirty days was 23,145, and the expense of hire of roller, fuel, and water, £71 17s. 11d., which, after deducting for time expended for using spikes, shows the cost of rolling to have been 2·67 farthings per superficial yard. This result has been obtained with a hired roller, but the expense would have been reduced by purchase at least 30 per cent., taking all contingencies into account.

This is somewhat dearer than horse rolling, but, says the report, "the vast superiority in every way of the work done by the steam-roller will prove the latter to be far the more economical." A convincing proof of the economy of steam rolling lies in the fact that less labour is required by sweepers, and less mud is removed by their operations than under the old system of coating macadamised roads. One advantage was that by night rolling, which was introduced in Gloucester-place and Baker-street, the inhabitants of the district, who noticed a rough and almost impassable way in the evening, were agreeably astonished to find a road ready for their use in the morning.

The report of the chief surveyor concludes by recommending that a steam-roller be at once ordered for Marylebone.

◆

GALLOWHILL MANSION.

One of our illustrations this week represents a mansion recently completed for the late Peter Kerr, Esq., of Paisley, at a cost of from £12,000 to £13,000. It occupies the estate of Gallowhill, lying on the east side of the road from Paisley to Renfrew. The architects under whose directions the building was erected are Messrs. Salmon, Son, & Ritchie, of Glasgow.

◆

TUMULI AND MONUMENTS IN THE HEBRIDES.

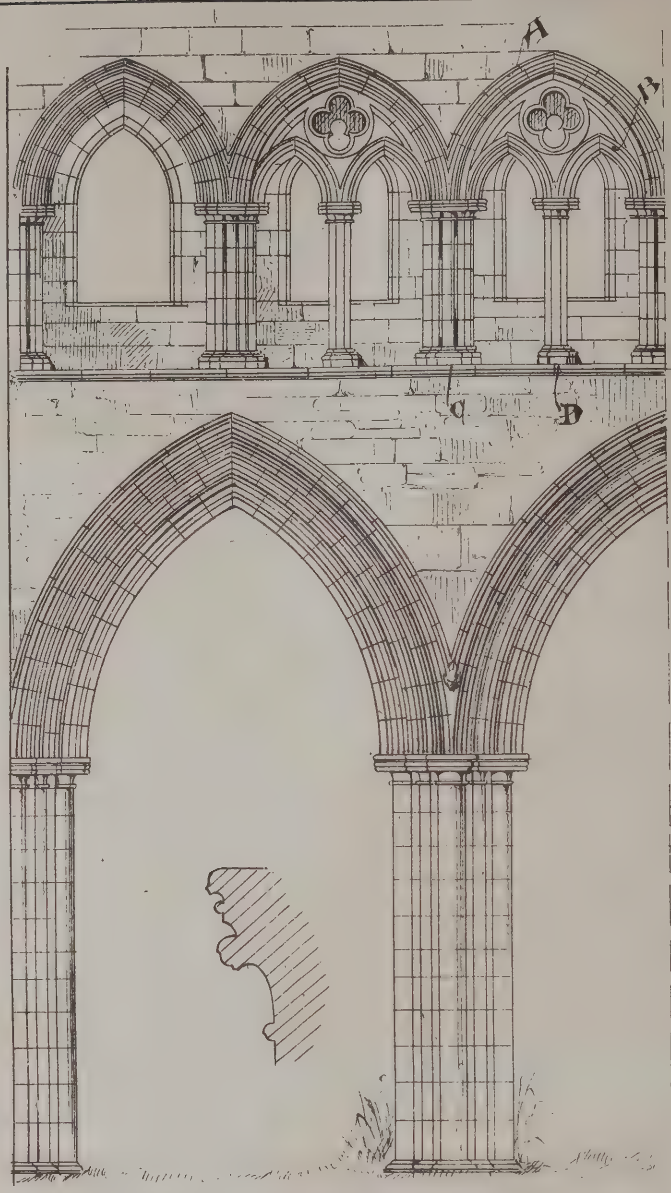
An account of "A Recent Examination of British Tumuli and Monuments in the Hebrides and on the Western Coast of Scotland" was given in a paper read by Mr. John S. Phené before the British Association. The tumulus in the larger Cumbrae in the Frith of Clyde contained five stone cists, each formed of four slabs of red sandstone with a large overlaying slab. Within the cists were fine white pebbles. The cists were in an apparently studied position, the largest being placed nearly north and south, and on each side one of smaller dimensions trending towards the east and west. To the rear of the first was a small cist containing the skull and bones of a child, and on the western side of that one there were no remains. The first and largest cist contained the bones of a large man. In the small cist, with the bones of a child, were portions of a broken urn; and in the western one a clean and empty urn only. There was a uniformity about the whole mound, which pointed clearly to the cists being of one date, and that they represented one funeral operation. By the permission of the Earl of Glasgow a cutting was made through the tumulus, affording abundant proof that the mound had been raised by art. The next object to which Mr. Phené called attention was a tumulus at the northern end of Cantire, which is still under investigation. In it Mr. Sinclair, of Gartengrenach, discovered an urn similar in design to the principal one from Cumbrae. A similar repetition of memorials occurred again in the direction of the Crinan Canal. Other discoveries were referred to by Mr. Phené, who stated that on the western coast and islands up to Durness, by Cape Wrath, indications of a Pagan race were to be found.

◆

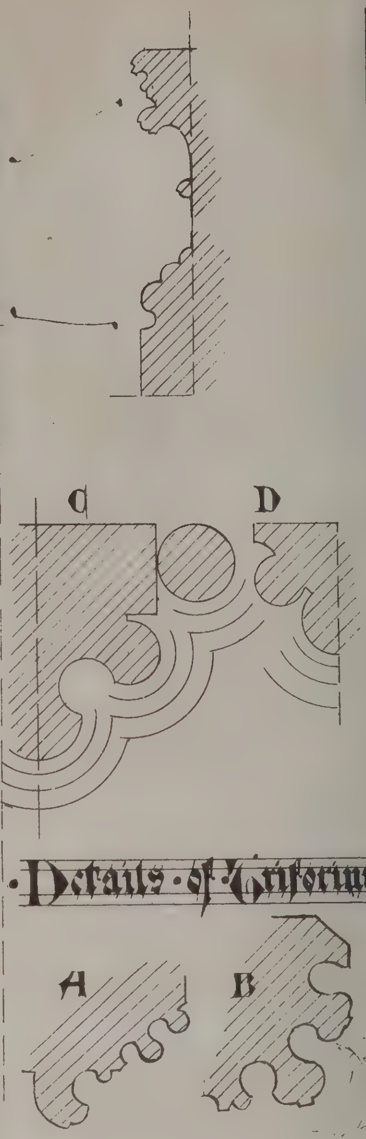
Educational Board for London.—As a new board is about to be elected, under the new Act, to impose an educational rate, and direct to a great extent the educational machinery of the metropolis, it behoves all who feel an interest in the matter to use their influence to send the best men to the board. We see the names of men who are professional talkers, and others who are animated by a fussy ambition, are before the public. But why a man, because he can talk in Hyde Park, or direct a trades' union, should be considered qualified to sit on a metropolitan educational board, we cannot imagine. What are wanted are men of character—men of judgment and discretion, who have time and inclination for the work. The elections will take place next month, and we hope all our readers will try and secure the right man for the right place.

---

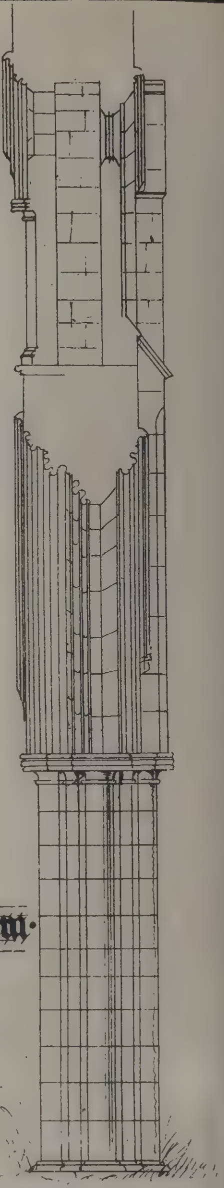
* This series of articles is a reproduction of Robert Riddell's work on the subject, published in Philadelphia, and by Trübner and Co., London.



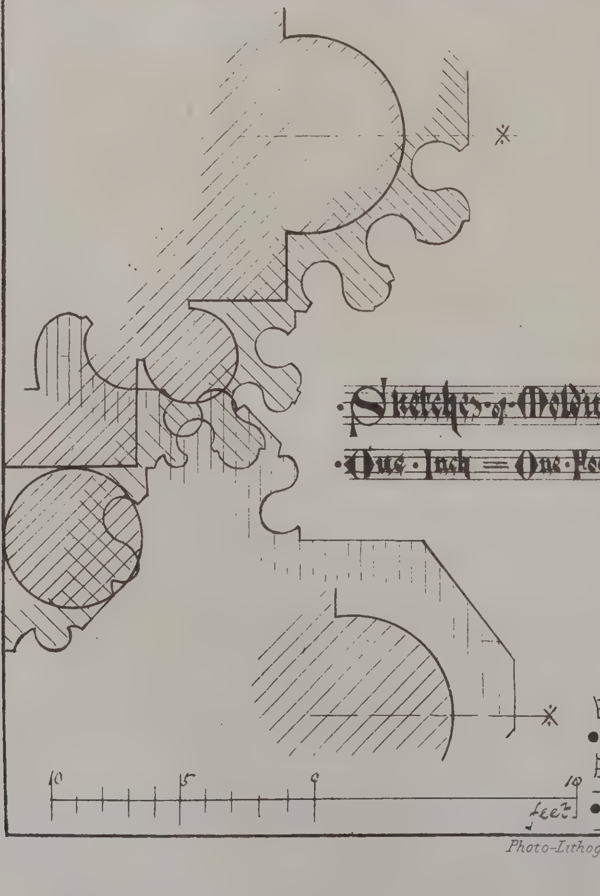
·Elevation·of·Arcade·



·Details·of·Triforium·

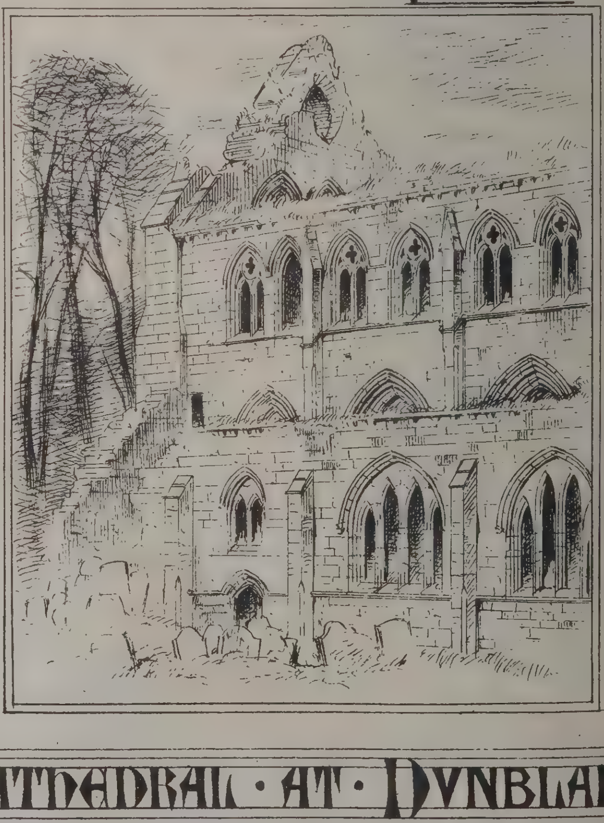


·Section·



·Sketches·of·Moldings·

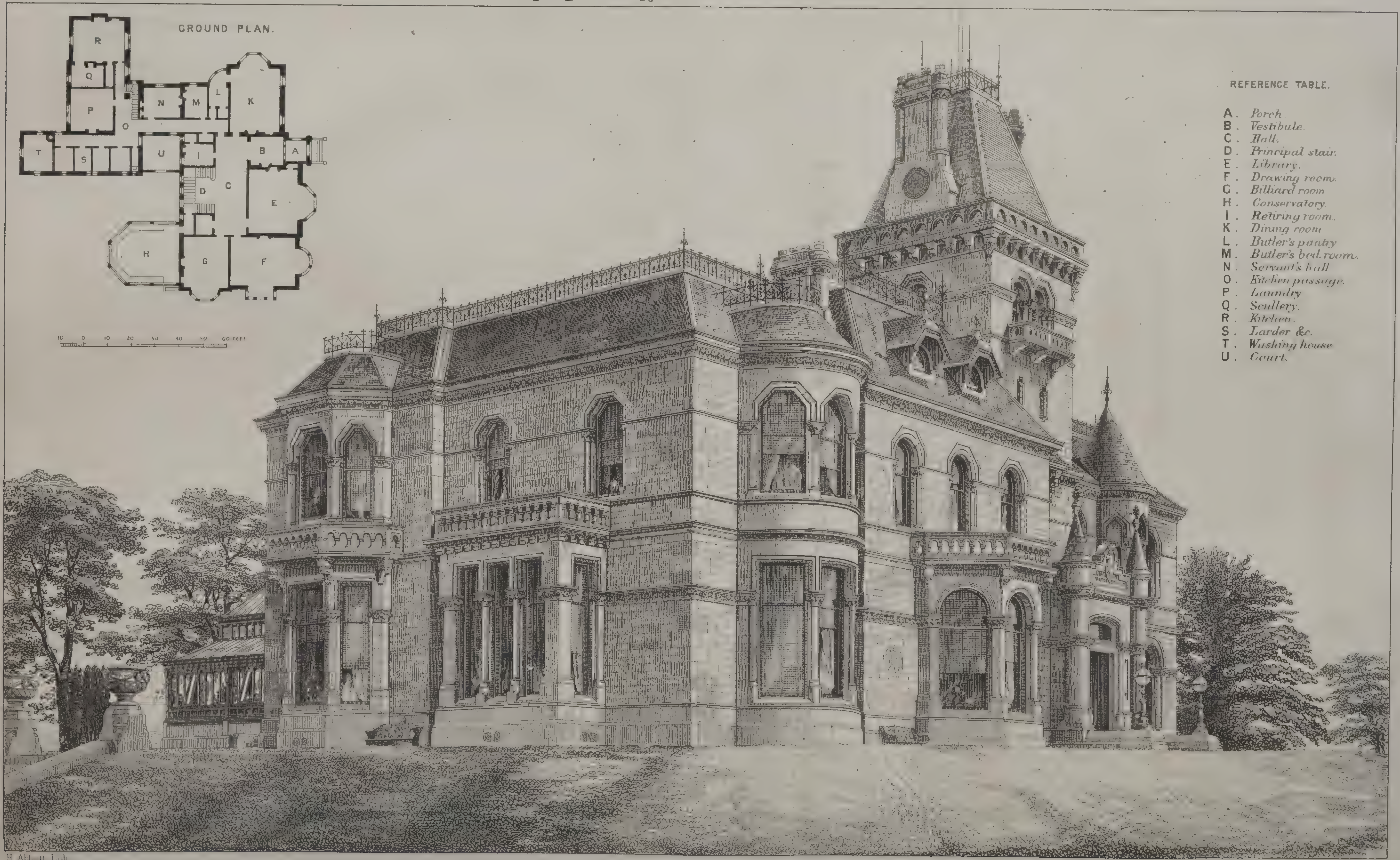
·One·Inch = One·Foot·



·CATHEDRAL·AT·DVNBLANE

·DETAILS·OF·NAVE·ARCADE·

Photo-Lithographed by Whiteman & Bass London



REFERENCE TABLE.

A. *Porch.*
B. *Vestibule.*
C. *Hall.*
D. *Principal stair.*
E. *Library.*
F. *Drawing room.*
G. *Billiard room*
H. *Conservatory.*
I. *Retiring room.*
K. *Dining room*
L. *Butler's pantry*
M. *Butler's bed room.*
N. *Servant's hall.*
O. *Kitchen passage.*
P. *Laundry*
Q. *Scullery.*
R. *Kitchen.*
S. *Larder &c.*
T. *Washing house*
U. *Court.*

H Abbott Lith

Printed by Whiteman & Bass

GALLOWHILL MANSION.

SALMON SON AND RITCHIE, ARCHTS

Furniture & Decoration.

THE THEORY AND PRACTICE OF MODERN HOUSE PAINTING AND DECORATION.

By "An Experienced Workman."

(Continued from page 264.)

PATENT AND OTHER PROCESSES FOR REMOVING OLD PAINT FROM WOOD.

SINCE commencing these articles our attention has been called to several methods and mixtures for removing old paint from wood, &c., of which methods and processes we purpose giving some account in this paper, as being very useful and necessary to be known by the painter and decorator. Several of them we have tried, and can therefore speak from practical experience. Old woodwork, which has had a great number of coats of paint put upon it year after year, is apt in time to crack and blister. This arises from various causes, which causes we have enumerated in a former article. Outside work, and the shutters inside of windows, are particularly liable to get into this state from the heat of the sun, &c., &c. It becomes, then, necessary to remove the whole of the accumulations of coats of paint, varnish, &c., down to the bare wood, in order to produce a level and smooth surface to start from in repainting. This is the more necessary, in that any and every additional coat of paint put upon the old work only adds to the existing evil. It is a common experience with painters to find that work that has hitherto given no indications of blistering or cracking will, immediately on being repainted, commence both to blister and crack. Why this is so we do not attempt to determine, but merely state a fact. Given the necessity for removing the paint, the next question is how best to accomplish that object. The old method used to be to burn the paint off with red-hot irons. These were simply flat pieces of iron, about four or five inches square, or of a heart-shape, or triangular, like a smoothing-iron, affixed to handles about a foot or 18in. long. These were heated red-hot, and held close to the paint, which of course began to frizzle and burn under the iron, and, while the paint was soft with the heat, the workman would scrape off the paint with a chisel, knife, or scraper (a flat square-ended knife)—a clumsy process, often causing more injury to the work than it did good. This was also a very slow process, involving much waste of labour and time. The next improvement—if it can be so called —was to burn the paint off with either naphtha or turpentine in this wise : The workman is provided with a brush, a pot containing either naphtha or turps, and a broad chisel, knife, or scraper. The work to be stripped is then saturated with the spirit, and, while it is wet, a light is applied to the bottom of it ; the whole surface is immediately one mass of flame, which softens the paint, and while it is soft the workman scrapes or chisels off the paint. This requires to be very quickly done, else the paint gets hard. This method does very well on level surfaces, but is of course totally unsuited to moulded surfaces. There is also a very great danger of the operator having his hands burnt, and the burning paint quickly gets hard on the cold steel of the knife and blunts it, and has to be scraped off before the workman can proceed, thus causing delay, during which the flame exhausts itself, and necessitates another application of the burning spirit. On moulded surfaces, both this and the hot-iron process are almost useless. There is a constant slipping of the knife in scraping, causing cuts and indentations in the wood, which, in themselves are almost as great an evil as the blistering. There have been two or three patents taken out for machines to effect this purpose, in which the leading principle is the maintaining of a permanent heat to burn off the paint or keep it in a soft state. One inventor has a machine in the form of a portable fire-grate, in size about 10in. by 6in., with two handles and a sliding lid at the top, and scrapers attached to the front, just above the fire. The grate is filled with charcoal and lighted, and when it is of a red heat the workman holds the machine in one hand and places the fire near the work to be stripped, and when the paint is softened he applies the scraper, and gradually moves the whole, bringing the paint with it ; the scraper being attached to the front of the grate becomes hot, of course, and remains so, thus avoiding the difficulty of the cold steel mentioned in the other processes, and removing the paint more easily. The fire in the grate keeps the paint soft until it is all cleaned off, and the scrapers being fixed are not so liable to chip or cut the wood as the knife. The inventor supplies scrapers of various forms, made to fit and scrape the ordinary run of moulded surfaces. Another patentee offers a machine for the same purpose, in which the heat is produced by a very ingenious arrangement for producing a flame which shall burn and soften the paint. In this machine the principle adopted is more of a scientific nature than the one described above, but not so efficacious by any means. It is grounded on the lamp form. The lamp, if we may so call it, is made of a cylindrical or barrel form, having an opening in front and a handle behind; it has two cisterns, the one at the bottom in the ordinary lamp form with a wick ; the other cistern is in the upper part of the lamp, with an open space between the two ; both cisterns are fed with naphtha or paraffine. From the top cistern is a safety-valve, and from this cistern a pipe descends to a convenient distance behind the wick and flame of the lamp. The rationale of its action is as follows : The flame of the lamp heats the naphtha in the upper cistern and it begins to evaporate ; this evaporated spirit has no other outlet but the mouth of the pipe, which is placed just behind the flame of the lamp ; it therefore rushes down the pipe, unites with the flame of the lamp, and forces it outwards in one bright and powerful jet of flame, in a horizontal position, which the workman can, of course, direct on to any portion of the work. There are no scrapers attached, and the workman has to go back to the old system of using the cold knife. It will be evident that this machine, however ingenious, will not answer the purpose so well as the one before described. These inventions are no doubt very ingenious, and answer their purpose as far as they go ; but there are many drawbacks in connection with them ; they do not provide adequately for the cleaning out of the quirks and mouldings of woodwork, and the old paint, if not all cleaned off while it is hot and soft at the first application (which is almost an impossibility), becomes ten times harder than it was at first, after being once burnt, and requires so much heat to reburn it that the wood often suffers in consequence. It will be evident also that there is much danger of an explosion in the last-named machine, and that the fumes from the burning paint must be very injurious to the health of the workman. We may, therefore, conclude that these, and, in fact, all machines in which fire is the active agent for burning off paint, although they really do burn off the paint, they do not do it efficiently ; and besides the danger to the person and to health involved in their use, they are but a clumsy means of doing what can be much easier and better done by the aid of chemistry. We come now to the more simple and less dangerous means of destroying paint, provided by the practical chemists of the day. It will be evident that a very considerable amount of inventive skill and of chemical knowledge has been brought to bear upon this subject, and it would hardly be supposed that to accomplish so simple a matter so many clever brains should have been exercised.

There are several chemical mixtures in the market for burning or dissolving paint, which are sold under different names, and which, like patent medicines, are guaranteed to answer for all sorts of purposes. Some of them are advertised to clean paint, stone, brass, &c., &c., *ad libitum.* The principle upon which they all appear to act is simply to turn the oil contained in the paint into soap, and the cohesion between the oil and lead being thus destroyed, of course the lead and other residue become mere mud, which may be washed off the wood with water and a brush. It will at once be seen that this is a simpler as well as a more sensible process than the burning with fire. These preparations are mostly based upon a mixture of common washing-soda and quicklime, which latter we have used for a great number of years for cleaning off old paint. About 2lb. of soda is added to a bucket of newly-slaked lime, which should be of the consistency of thick cream. In this state it is laid upon the work ; it immediately begins to burn or dissolve the paint, and in the course of time, short or long as the case may be, the whole of the paint on the work becomes soft, and washes off as if it were merely the mud of the street. Doors, shutters, and other work which can be taken down and laid flat, should be so laid before the liquor is put upon them. This allows the composition to be put upon the work in sufficient depth to cover the whole of it, which facilitates the doing of it. It is always best to let the mixture remain on the work a sufficient time to dissolve the paint effectually, so that there will be no necessity for using the knife to scrape it ; the whole may then be washed off, and it will leave the wood clean and almost as free from paint as when it left the joiner's hands. The lime and soda must be well washed off with clean water, and the work allowed to stand for a few days to get thoroughly dry before being painted again. In doing any work which it is not convenient or which cannot be taken down, and must by necessity be stripped as it stands, the lime and soda should be mixed stiff, so that it may be spread upon the work with a pallet knife or a trowel. Its thickness will keep it moist for a sufficient length of time to allow it to destroy the paint, but it may be kept damp by wetting, which will assist the application. This is rather a dirty process, but that is the only objection we know of that can be urged against its use ; on the other hand it is always convenient, always at hand, and very simple in its application and effect. The operation of the various patented solutions for destroying paint is somewhat similar to the lime and soda process, and they seem to us to consist of the same chemical agents. One mixture is sent to us on the " no cure no pay " principle. This is in the form of a solution, and seems to us to be simply the liquor from the mixture of lime and soda, with some other chemical substance added ; it burns or softens the paint, but takes queer ways to do its work. It is applied with a brush. After it has been on some time its effects may or may not be perceptible, according to whether the atmosphere is dry or damp ; if it is dry the composition will dry also, and not have any effect, but if the next day should be wet or damp the work which has been done over with the composition will be wet and slimy, and so it alternates day after day. We found that this did not answer, and of course returned it from whence it came : for obvious reasons we forbear to mention names except where we can give praise. Another patent composition is called extract of lethicum. We confess we are quite ignorant as to what the lethicum may be of which this composition is the extract, but from the numerous and particular cautions given in the circular as to the extract being carefully washed off the wood with vinegar or some other acid, we have very grave doubts as to whether the paint, which is put on afresh after the old has been removed, will not be injuriously affected by that portion of the composition which may remain in the wood through solution, for whatever solution is used it is almost impossible to prevent some portions of it from being absorbed into the body of the wood.

The only other solution we have tried is manufactured by Mr. Jas. Gray, manufacturing chemist, of Glasgow, and is very sensibly called painters' solution. This mixture, whatever its component parts may be, is decidedly the best, most efficacious, and most useful composition for the purpose we have yet become acquainted with. Its action is quick and effectual ; it destroys the paint and leaves no injurious effects behind it ; and is equally efficacious, when reduced in strength, in cleaning paint of any description, and by adding a little size to a weak solution for cleaning paint or varnished work, it will leave it with a good gloss. Its efficiency in cleaning stone, &c., we cannot speak to, not having tried it, but we have a very considerable amount of faith in its cleansing properties, and we should think it will do all that its inventor says it will. Being a solution, it is of course very portable and cleanly, and we have found it of great use in the workshop and on a large job, in saving of time in cleaning paint-pots, cans, &c. We have a tub or bucket filled with the solution, into this we put any dirty paint-pots, cans, kettles, or other things hard and thick with paint, we leave them in for a time, when they only require to be washed, and they are as clean as when new. In workshops or large jobs, this will be found to be of great service, and will effect a great saving of time and money.

RUSKIN'S LECTURES ON ART.[*]

By STOPFORD A. BROOKE.

(From *Macmillan's Magazine* for Oct. 1870.)

(*Continued from page* 265.)

MR. RUSKIN has not only shown us how to go to work. He has a rare power of seeing into the central thought of a picture, and his wide knowledge of the aspects of nature enables him to pronounce upon truth of representation. He has performed this labour notably on Turner and Tintoret. Turner's phrase, that " he sees meanings in my pictures which I did not mean," is the exact truth ; and Shakespeare would no doubt have said the same had he read Schlegel. He has revealed the genius of Turner to the world by comparing Turner with Nature ; and those who have spent hour after hour in the enchanted rooms of the Ducal Palace, or wandered day after day through the sombre galleries of the Scuola San Rocco, know what he has done for Tintoret. It has been said that the world appreciated Turner before Ruskin spoke. A few persons and the artists did (no one ever imagined that the artists did not heartily acknowledge his genius), but artists have not the gift of speech, nor, with an exception or two, such as Eastlake, the faculty of criticism, and we have only found out at last from their biographies what they thought. It is absurd to quote their isolated sayings as a proof that the public understood and valued Turner before Ruskin wrote. Artists say that they pointed out Tintoret to Ruskin, but why did not they point him out to the world? The public wish to be taught, and the artists are silent. We expect it is that they have not much to say. They know what is good ; so does Mr. Ruskin. But he takes the trouble to tell us what is good and why it is good, and we owe no gratitude to the artists and a very great deal to him.

Now to do all this, to read Nature, Poetry, and Painting for us, and to continue doing it, was Ruskin's peculiar work, and the greater part of it was most nobly done. We ask, with sorrow, why he abandoned it? We have suffered no greater grief than when he left it and took up other labours, for which he was eminently unfitted, and the effect of which was to spoil his powers for his especial business. Sanitary reform, political economy, the dressing of England, manufactories, crime, poverty! *que diable allait-il faire dans cette galere?* A man must have iron nerves and little acute sense of beauty, to play his part in that battle-field, and the result on Ruskin has been like that which would follow on sending a poet like Shelley into one of the war hospitals. He ceases to be able to write poetry and he kills the patients.

This is one of the great mistakes which are scarcely ever remedied, and we trace its results in every one of these lectures, which are weakened by the forced introduction of irrelevant matter, and by the hopeless tone which much musing on miserable subjects has brought into his temper and his style. We trace the latter in the very first page, where he says that it " has chanced to him of late to be so little acquainted either with pride or hope that he can scarcely recover so much as he now needs of the one for strength, and of the other for foresight." We appeal to him to throw by altogether the peculiar class of subjects of which we speak, and to believe that when God has given him so plainly a particular work to do, it is his first duty to stick to that work, and to to put aside everything which interferes with it. Hope will return when he does his proper labour, and the noble pride of the workman in his toil will give him strength when a crowd of importunate duties outside his sphere are sternly shut out, and he concentrates himself on the one great duty of his life—the unveiling to men truth and beauty in art and in nature.

We trace this despondent tone, and the consequent false view of the world, still more pathetically in a passage in the " Catalogue of Examples," where he describes himself as walking in his garden early in the morning to hear the nightingale sing, and sees " the sunlight falling on the grass through thickets of the standard peach, and of plum and pear in their first showers of fresh silver looking more like much broken and far-tossed spray of fountains than trees," and hears the roar of the railroads sounding in the distance, " like the surf of a strong sea," and thinks that " of all the myriads imprisoned by the English Minotaur of lust for wealth, and condemned to live, if it is to be called life, in the labyrinth of black walls and loathsome passages between them, which now fills the valley of the Thames—not one could hear, this day, any happy bird sing or look upon any quiet space of the pure grass that is good for seed." It is so strongly expressed and so prettily ended, and has so much of fact to bear it out, that one at first is inclined to believe it all. But it is very far from the whole truth. Every year sees more grass in London, and more trees ; the parks are more crowded with children and working men and roughs, who, with all their rudeness, respect the flowers and enjoy the meadow ; the song of the thrush is not quite gone from the gardens of Kensington and Victoria Park ; in spring and summer time, owing to the very railways which Ruskin seems anxious to abolish, thousands pour out of London every week to Epping and Richmond and Hampton and the Downs, and even drink the sea-breeze at Margate and Brighton. Our poor see far more of the country and of lovely places than they did in the past times which we glorify so foolishly ; and bad as London is, it is better now that we have proved that we can actually stamp out the cholera than it was in the days when the black death strode unopposed through its streets, and reaped a harvest in its filthy lanes and reeking cottages which it could not reap at the present time, when the whole nation is ten times cleaner.

It is a picture by Cima of Conegliano which he introduces to the students with this burst of sorrow, and he bids them look upon it when they would be in the right temper for work. " It will seem to speak to you if you look long. . . . His own Alps are in the distance, and he shall teach us how to paint their wild flowers, and how to think of them." Professor Ruskin seems to infer, from the whole of this passage, and from others in the lectures, that when these delicate and beautiful pictures were painted by Bellini, Cima, and others, there was more enjoyment of the country and of lovely things by the poor (as if our love of landscape was not ten times more wide-spread than that of the Venetians?), and that the poor were better off, and lived a cleanlier and healthier life, and had better dwellings than they now possess in London. Neither Bellini nor Conegliano, we imagine, troubled themselves as much about the poor as even a vestryman of S. Pancras ; and if we take the city of Venice, to whose school Cima belonged, the facts which speak of dirt, disease, and ill-living, are appalling. In 1392 the Doge Morosini died of a great plague which swept away 19,000 souls. Not quite a century afterwards, in 1476, the pest came again, and 1484 it was again raging with unremitting fury. In 1556 plague and famine again devastated the city. Checked for a time, it broke out again with desolating violence in 1576 ; and in 1630 the great church of S. M. della Salute, which guards the entrance of the Grand Canal, was built by the vows of the Senate to beseech the prayers of the Virgin to avert another awful destruction from the people. We know now pretty well, by our own sad experience, what these visitations mean. They mean that the curse of darkness and low living, and vile dwellings, and pestilential crowding was as deep over the sun-girt city where Cima of Conegliano worked, as it ever has been in England, as it is not now in England. None of the other Italian cities were much better off, though plague was naturally worse in Venice, from its closer connection with the East, from its vast population, and from its want of fresh water and drainage.

This curious inability of seeing facts, when he is entangled with matters irrelevant to his proper work, has spoiled some of Professor Ruskin's past labour, and diminishes the influence of these Lectures. In another man it would be culpable negligence. In his case, he is partly blinded by his crowning mistake, to which we have alluded, and partly swept away by his theory. But men should not be blinded, and should not be swept away, and Ruskin's work suffers in consequence. For by and by (and this is frequently the case) he is sure to see the other side of his theory and to dwell on that with equal force. Both statements are set over one against each other, but in different portions of his works ; and the world of readers naturally declares that he has contradicted himself. He denies this, saying that he has stated both sides of the truth ; but stating both these sides separately and with equal vehemence, without having balanced them, he runs into exaggeration in both, and, instead of distinctly defining one truth, rushes into two mistakes. The result is that those who admire and revere his teaching, as we ourselves most sincerely do, are greatly troubled at times to defend him and to understand him. They are wearied by the efforts they have to make to set aside what is due to impetuosity, and to find by a laborious comparison of passages what the truth really is which he desires to tell.

We hoped, for example, that in the lecture on " The Relation of Art to Morality " he would have laid down plainly what he meant on this vext subject. But we are bound to say that he has done so in a confused manner. His first phrase is, " You must have the right moral State or you cannot have the Art." He does not say you must have certain moral qualities in an artist or a nation, or you cannot have noble art :—he makes the immense requirement of a *right moral state,* which is either too vague a definition, or means that the whole state of any artist's moral character must be right or he will not produce good work. Everybody at once denies this, and brings examples to disprove it. Ruskin says that those who have misapprehended the matter have done so because they do not know who the great painters were, such as those " who breathed empyreal air, sons of the morning, under the woods of Assisi, and the crags of Cadore." Well, let us take him out of Cadore. The life of Titian is not the life of a man in a right moral state, in our usual sense of the words ; nor does it agree with Ruskin's sketch of a moral life, in which he includes " any actual though unconscious violation of even the least law to which obedience is essential for the glory of life and the pleasing of its giver." Titian lived the life of a noble natural character, but his morals were entirely unrestrained by any considerations belonging to high morality. He was the friend of Aretino, and that speaks volumes for his moral standard. Tintoret, a much higher moral character, despised Aretino. Titian dined with that vile person with the vilest of women. It does not say much for his reverence that he had no objection to chant the Magnificat over a dish of savoury partridges. He lived freely, he spent his money freely, he drank freely, though wisely. Nor was the society of his city in a right moral state. It had not sunk down into the faded baseness of Venice before the French Revolution. It had still a reverence for truth, and honour, and generosity, but these were combined with an audacious immorality of the body, with fiery jealousies, with the most headlong following of passions. A good deal of this is confessed by Professor Ruskin, but his confession only proves that his original phrase is far too large for his meaning. What he does mean, if we take the illustrations which follow as explanations, is this, that whatever is good in an artist's work springs from some corresponding element of good in his character, as, for example, truth of representation from love of truth. But this only predicates the existence in him of some moral qualities, not that he is in a right moral state, which means that the whole of his character is moral. With these moral qualities may exist immoral qualities, such as sensuality, and the evil influence of that will also be seen in his work. Stated thus, Ruskin only means that a man's character is accurately reflected in his art, and this, with respect to the *ideas* of his work, we are by no means disposed to deny, seeing it may be called a truism.

---

[*] Lectures on Art, delivered before the University of Oxford, &c. By JOHN RUSKIN, M.A., Slade Professor of Fine Art. Oxford : Clarendon Press, 1870.

But in other places, in scattered phrases, he seems to speak directly from the large statement, and to assume that it is true in its entirety, though he has modified it again and again. This is the element of confusion in the lecture, and it is at times extremely provoking.

It is worth while, perhaps, to look at the subject more closely. Noble art is the splendid expression, through intense but subdued feeling, of noble ideas. Nobleness of conception is its first element; but it is also necessary that the ideas should be represented simply, directly, and in a manner true to natural fact; that the harmony of the work should be complete, and also its finish; that the subordination of the parts to the whole, and their several relations, should be clear in statement, unbroken by any extravagance in any part, or any indulgence of mere fancy; and that the technical skill employed should be almost intuitive in absolute ease, accuracy, and knowledge.

Does all this presuppose a right moral state in the artist? The first element does partly do so, for it is not possible that a base person can have noble thoughts or express them nobly,—at least in the ear or to the eye of a noble person; the imitation is at once detected; nor is the feeling of a base person ever intense, and even should he possess some passion, he cannot subdue it to the calm in which a great thought can alone take its correspondent form. Even that love of sensual pleasure which is so characteristic of artist life, and which by no means supposes a base character, though often an immoral one, spoils, we think, the predominance of high imagination in artistic work. No one who has studied Titian and and Tintoret can, in our opinion, compare the two, so far as moral majesty of thought is concerned, and grandeur of imagination. In these points Tintoret as far excels Titian as his life was simpler and purer than Titian's. The same may be said of Raphael and Michael Angelo. But, on the other hand, a man like Angelico may be in a much more right moral state than Titian, and yet never reach his nobility of conception.

It is plain, after all, that the possession of imagination is the first thing, and of individuality the second, and that the moral condition only influences and does not secure or destroy the ideas of genius. What really reduced the work of the later artists of the Renaissance to its poverty of ideas while retaining exquisite technical skill, was not their moral state, which was by no means so bad as Ruskin says, but the way in which all individuality was over-ridden by the predominance of the past. They became imitators, not inventors, and even Raphael's work shows that this deadening influence had begun. The Renaissance began by intensifying individuality and setting it free, in the case of art, from the shackles of religious conventionality; it ended by laying a heavier yoke of convention on art than even religion had done. Art could not endure that, and it perished.

On the whole, then, noble conceptions in an artist's work only presuppose *some* moral elements in his character, and it is not seldom the case that when an artist's moral state is absolutely right, there is a want in his work of healthy naturalness, of fire and warmth, of bold representation of human life. He is liable to be overawed by his own morality, he is likely to direct his work to a moral end as his *first* aim; and that would be the ruin of art.

But putting noble ideas aside, and taking up the other qualities of great art, such as preciseness of handling and the rest, do these necessarily presuppose a right moral state in the artist, or even analogous moral qualities? Ruskin boldly declares that they do. The infinite grace of the words of Virgil is due, he says, to his deep tenderness. The severity—severe conciseness, we suppose—of the words of Pope, to his serene and just benevolence. Both of these excellences may have been influenced by the moral qualities mentioned; but we suspect they were mainly due to the literary work which preceded the "Æneid" and the "Essay on Man." Pope was the last great artist of that critical school which began, we may say, with Dryden. Virgil developed into perfection the gracefulness which the Roman world of letters had been striving to attain for many years. They entered into the labours of other men, and added to these the last touch.

(*To be concluded next week.*)

◆

ON MARBLES FROM THE ISLAND OF TYREE.*

TYREE is one of the few islands in the Hebrides where limestones are found, and two varieties are sufficiently remarkable to form the subject of this note. Both occur at Balephetrish, on the north-west side of the island, and near the coast. One of these occurs as a beautiful pink marble with dark green spots, and this, I believe, is unknown in any other part of the world.

The pink colour is due to peroxide of iron, and the dark green spots, which vary in quantity considerably in different specimens, are crystals of hornblende. Three selected specimens accompanying this paper illustrate this variety. It takes a good polish, and two small polished pillars of it may be seen in the British Museum. There is difficulty, however, in procuring large slabs, as these generally contain some pieces of hornblende, several inches in diameter, and difficult to polish. It is a beautiful marble for inlaying in small pieces; its effect is well shown inlaid in a fine white marble mantelpiece in Inverary Castle. The white marble is too hard for ordinary working, but, as a facing-stone for exterior work, it would be almost imperishable.

The proportion of magnesian is remarkable.

The hornblende in the pink, and the silica in the white are variable :—

	Pink.	White.
Calcium carbonate	70·85	50·70
Calcium sulphate	trace	—
Magnesium carbonate..	2·35	37·92
Peroxide of iron	3·40	—
Calcium phosphate	—	0·80
Silica................	—	10·18
Hornblende	23·40	—
Water	—	0·40
	100·00	100·00

The peroxide of iron is scarcely soluble in dilute hydrochloric acid, which leaves most of the colouring matter.

◆

STRASBURG CATHEDRAL.

RATHER more damage appears to have been done to the cathedral during the siege of Strasburg than was imagined when we last week congratulated our readers on its escape from destruction.

The correspondent of the *Times* says :—"I am sorry to find that in my letter of yesterday I took too sanguine a view of the damage done to the cathedral. It is principally in the minor details of the architecture, which my glass did not enable me to detect, but much of the beauty of the spire is in its minute ornamentation, and this has suffered more than I had hoped. Almost entirely on the north side has the evil been done, the fire of the enemy coming from that direction. The principal thing that struck me at first was that the balustrade round the western side of the platform had been carried away and the shot which did it, taking it in profile, had passed on and injured the upper work of one of the niches in the first stage of pilasters, in which is placed the equestrian statue of Clovis.

"The result is not very serious, but for the present King Clovis presents a rather ludicrous appearance; a section of pillars has fallen upon him and adjusted itself in a slanting position, with one end resting on his bridle hand and the other on his chin, reminding one of the attitude of a clerk carrying an overload of ledgers. The King's brothers, Dagobert, Rodolph of Hapsburg, and the Grande Monarque, fortunately remain undisturbed in their niches. I should think that very few shots had struck the building, but the splintering, and even the concussion, perhaps, has been sufficient to bring down a good many of the light pilasters and spiracles, some of which, having been attached with wire, hang here and there, swinging in the air. The iron cross on the top, about 20ft. high, has been bent to one side, a matter of no great moment, but on which circumstance was no doubt founded the Parisian reports that the main body of the spire itself was displaced and toppling to its fall. From the minute nature of the damage done it is difficult to estimate its extent, but one thing is fortunately certain, that it is not irremediable, and probably it will not take any very great expenditure of time or money to set all to rights again. Down below, little or no essential harm has been done; the rich and beautiful work about the grand portal and the entry to the chapel of S. Lawrence has sustained no injury, and only one sacrilegious shot appears to have penetrated to the interior of the building. Unfortunately, it has entered just at the spot where the top of the organ rests, and the instrument has been a good deal shattered, but there the damage ends. The splendid old glass of the thirteenth and fourteenth century had been removed from the windows and carefully packed away when the siege was imminent, so it is fortunately safe. The wonderful pulpit is uninjured, and so is the altar. The astronomic clock has also escaped, and, by its side, that quaint conceit —the life-size effigy of Erwin of Steinbach—still lounges in its gallery, regarding with undisturbed satisfaction the uninjured beauties of Erwin's celebrated column. On the whole, there is every reason to congratulate the people of Strasburg and all lovers of the antique and the beautiful in architecture that the noble cathedral survives its dangerous ordeal in no worse plight."

◆

LONDON HOSPITAL FIRE-EXTINGUISHING APPLIANCES.

THE fire-extinguishing plant at this hospital has during the past few weeks been greatly increased, as an extra precaution against fire. The works have been supplied by Messrs. Merryweather and Sons, and are briefly as follows :—A 4in. iron main has been extended along the front and east end of the building, fitted with Mr. J. Compton Merryweather's improved frost-proof hydrants. This fire main is continually charged with water direct from the high pressure service of the East London Water Company, so that by coupling the hose, and turning on the hydrants, a matter of one or two minutes at the outside, one or more powerful jets of water may be projected into the windows or over any part of the building with great force. With regard to the appliances inside the building for fire extinguishing, nothing has been spared to make them perfect. Upon every floor and in each ward are placed upon rails leather buckets filled with water, and in each lavatory from which a supply of water can be taken is a portable fire-pump, all ready for instantaneous use. The value of these fire-pumps may be estimated when we state that seven-tenths of the London fires are extinguished by this means, and that at every fire-engine station are kept, and with each fire-engine and fire-escape belonging to the Metropolitan Fire Brigade are carried, one or more of these portable fire-pumps. In each corridor of the hospital there is, in addition to the foregoing, a powerful engine popularly known as the "cabinet fire-engine." This engine is fixed in a cistern containing 50 gallons of water, and when pumped by one man discharges a jet of water at the rate of 20 gallons per minute to a distance of 50ft. The engine is upon castors and can be easily shifted in a few seconds to any spot where a fire may break out. With such appliances inside a building for extinguishing fire there need be but little fear, but as an additional safeguard there is fixed a water tank at the top of the building, containing about 50 tons of water, with constant supply attached, and connected thereto is a 3in. iron main descending from top floor to basement, and upon each floor is a firecock with hose attached for immediate use. Every part of the fire appliances is, in fact, capable of the most prompt application, and such a deluge of water could be brought to bear through these various channels upon the discovery of a fire that it could never extend to any but the most infinitesimal damage. The hose of the hydrants, firecocks, &c., and of which there is about 3,000ft., is of leather, with screws of the London Brigade gauge.

---

* Read by EDWARD C. C. STANFORD, F.C.S., before the British Association, Liverpool Meeting, Section B.

The hospital, in addition to the foregoing, has one or two powerful manual fire-engines.. Great credit is due to the governors of the London Hospital for so thoroughly protecting the building, for it is fearful to contemplate the terrible loss of life that would necessarily happen in such a building if fire once held the mastery—hundreds of helpless, bedridden invalids to become a prey to the flames.

EUSTON-SQUARE TERMINUS.

EXTENSIVE improvements have been in course of execution since the beginning of this year at the Euston-square terminus of the London and North-Western Railway. The works have comprised the raising of the whole roofs of all the sheds over the platforms and railway to an additional height of 6ft. The aggregate dimensions of the roof space thus raised, in four spans, are 900ft. by 130ft, and the operation was effected without any interruption to the heavy passenger traffic. On the east side a number of small houses in Seymour-street have been removed, the space thus gained being devoted to widening the terminus by 100ft., thereby giving additional accommodation for the trains arriving in London. On the west side, in Birchmore-terrace, Cardington-street, new workshops and offices have been erected, and a tunnel for the use of the company's servants has been constructed beneath the entire width of the station. These works have been carried out by Messrs. W. Cubitt & Son, of the Gray's-Inn-road, under the direction of Mr. W. Baker, the company's engineer.

Greatly-improved access to the terminus has also been attained by opening out the main entrance direct to the Euston-road. It will be remembered that there used to be a short street (impassable by vehicles, on account of a locked bar or gate) leading from the north side of the northern half of the enclosure of Euston-square to Drummond-street, directly opposite to Mr. Hardwicke's stately Greek portico through which access is had to the station yard. The gate or bar referred to has been removed, and the short street in question has been continued direct to the Euston-road by cutting in two the northern half of the Euston-square enclosure. These two halves of the enclosure have been united by a tunnel passing beneath the level of the new roadway, similarly to the tunnel in the Zoological Gardens, Regent's Park. At the junction of the new station approach-road with the Euston-road there are two gates, dividing the incoming and outgoing traffic, and at each corner of the Euston-road is a lodge, designed by Mr. J. B. Stansby, assistant engineer to the company. Each lodge contains one room on the ground floor and one room overhead ; the inside dimensions are 24ft. square. The exteriors of these little buildings, on all sides, are ornamented with decorative sculpture, executed by Mr. Pitts, under the direction of Messrs. Cubitt. The groups of figures on the pediments represent England, Scotland, Ireland and Wales. The monogram L.N.W.R is displayed at the four corners, and the names of all the important towns accessible by the company's lines are inscribed, in alphabetical order, at the angles of the two buildings. These structures are to serve as parcels offices, &c.

THE LIVERPOOL ARCHITECTURAL AND ARCHÆOLOGICAL SOCIETY.

THE first meeting of the twenty-third session of this society was held on Wednesday week in the Royal Institution, Colquitt-street. Mr. H. H. Vale, the president, occupied the chair. Besides members there were a number of ladies present, and amongst the visitors was Mr. Thomas Wyatt, president of the Royal Institute of British Architects. In the course of a few remarks in acknowledgment of the cordial reception which he met with, Mr. Wyatt said the Institute attached much importance to the support and adhesion of the provincial societies, and there was a growing feeling in favour of the union of the various architectural societies into one powerful body. The President, in his opening address, dwelt at considerable length on several subjects of local interest. Referring to the high death-rate in the town, he said it behoved all the members of the profession to lend their aid in extending, both here and elsewhere, popular knowledge upon the great and vexed questions affecting town populations, the condition of the homes of the people, the sanitation of our water supply, sewers and public thoroughfares, and, generally, to aid local legislation by professional knowledge and individual energy. The authorities, when constrained to work out the problem of the appropriation of space in relation to habitations, had found that their own stringent enactments had required considerable relaxation in practice, and the bye-laws relating to open spaces about dwellings might, he thought, be considered as now almost practically abolished. If we were to have cheap and healthy dwellings for the people the authorities must meet and encourage private enterprise, and not endeavour to thwart and cripple it, as those stringent enactments undoubtedly tended to do. In a rapidly-changing age like the present discretionary powers in these matters should be vested in the magistrates and corporate officials, otherwise much money must be wasted in applications for fresh parliamentary powers to meet the growing wants of a large community. Statistics proved, he believed, that their system of sewerage was the most costly one extant, although the town was one of the best situated for efficient sanitation. Their present water supply could not meet the wants of Liverpool for more than about ten years, and that five or six years would be required to carry into execution any scheme for going to Wales or elsewhere for a better supply; and the authorities, therefore, should be up and doing, lest they should be driven at the last moment into some hastily devised and temporary expedient. Good dwellings, good sewerage, and good water formed a natural sequence in the code of the sanitary engineer. It was satisfactory to know that increased hospital accommodation was being provided at the north end of the town and at Bootle, as well as at the south end; and he hoped it might not be long before the Bluecoat Hospital was removed into the country. There was plenty of room in the neighbourhood for the establishment of more free libraries and museums, which had a strong educational power, and he should like to see a permanent exhibition of paintings in the town. How was art to be encouraged there without a public fine art gallery ? Passing to topics of professional interest, he said he had for some years marked with great satisfaction the spread of courts of conciliation and arbitration for the settlement of disputes between masters and workmen in the building trade. He felt convinced that they would prove the very best—he might say the only—remedy for the so-called grievances of the operatives and the so-called tyranny of the masters. He thought that any reference to the Council of the Society in matters of special difficulty would be responded to in a public spirited manner. On the subject of river approaches, he considered that any scheme which did not provide better accommodation for foot passengers would entirely fail to meet the requirements of the case, and the public had a right to demand a speedy solution of this long-vexed question. With regard to the defences of the port, he considered that nothing short of armour-plated batteries was likely much longer to prove of service when opposed to modern gunnery, whether these batteries were erected on shore or floated out on rafts. Liverpool had of course its best defences in the honour of its pilots and the shallowness of its bar at low water. After referring to the restoration of Chester Cathedral, he said he was very doubtful whether in the modern constitution of a town population a cathedral, in the modern sense of the term, could be realised in Liverpool, and for his part he would much prefer to see a few more poor men's churches, in which the great mass of our people might worship without restraint, not in the presence of the rich or the fashionable, but beneath the eye of the Almighty alone. He did not consider that Liverpool had recently made any wonderful strides in ecclesiastical work, and he thought it must be patent to all of them that the churches built from 15 to 20 years ago were in better taste than most of the recent ones.

At the close of his address, Mr. Vale received the cordial thanks of the society.

EMIGRATION TO TEXAS.

A TEXAN correspondent of the *Hub*, a coachmakers' journal, published at Boston (U. S.), thus writes concerning the condition of Texas :—"There are two great railroads which by their chartered routes are bound to cross within its limits, and whenever they cross, we prophesy there will arise another Chicago. You will also see from the same source some account of the probability of erecting a large waggon and carriage factory at this place, and where could one pay better ? We have the very best timber in the world, namely, the *Bois-d'arc*, which certainly makes the best and most durable waggon or carriage of any wood yet known. Board can be had at our hotels from 10 dols. to 12 dols. per month, and provisions are generally low, and all kinds of stock. A good horse can be bought for 25 dols., cows 5 dols. to 8 dols., oxen 20 dols. to 50 dols., &c. Choice land brings from 2 dols. to 5 dols. per acre, and improved land from 5 dols. to 10 dols. per acre. As for society, we have good churches, good schools, and the laws of the land are generally enforced. It is a mistaken idea that we Texans are cut-throats and jail-birds – far from it. We work here entirely after the good old way, namely, by hand ; but, sir, I hope and believe that in two years more the *Hub* will tell a different tale from this quarter, for here is the site for one of the largest waggon and carriage factories in the United States. I say this for the benefit of any reader who has the hardihood to cut himself loose from his hearth-strings, and play the adventurer. Thirty-four and a half years ago your writer came to this country a boy, when low ponies, long shank spurs, cow whips, and branding irons were the style, set off by a full suit of buckskin. Those days have passed away and given place to the sturdy farmer, the busy mechanic, and the shrewd merchant. We send samples of our infallible, everlasting, world-without-end *bois-d'arc* wood. One of the pieces was cut from a fallen tree which has lain by the roadside for the past 22 years, and no telling how much longer."

LEGAL.—THE GROUND STORY CASE.

HAMMERSMITH POLICE COURT.—KNIGHTLEY, DISTRICT SURVEYOR OF HAMMERSMITH, V. YATES.

ON Friday, the 8th inst., this adjourned case was brought before Mr. Dayman, the magistrate. The defendant, a builder, built a row of houses and shops (the floors of the shops being level with the roadway), and at the ceiling level of the basement corbelled out chimney-breasts, which the plaintiff, the District Surveyor, contended were contrary to sec. 20, rule 1, of the Metropolitan Building Act, inasmuch as the breasts ought to have been built from the foundations. It was contended by the defendant that the *lowest* floor was necessarily the *ground floor*, urging that it was "next the ground."

The magistrate (who it will be remembered was at the last hearing inclined to coincide with the defendant's view) gave his decision, and quoted sec. 3, clause 6, sec. 20, rule 12, and sec. 23, rules 1 and 3, of the Building Act. Upon sec. 3, clause 6 ("the 'area' of every building shall be deemed to be the superficies of a horizontal section of such building, made at the point of its greater surface, including the external walls and such portion of the party wall as belong to the building ; but excluding any attached building the height of which does not exceed the height of the ground story ") the magistrate observed that if the defendant's contention were correct as to the meaning of the term "ground floor," then a building could not be erected higher than the ceiling of the lowest room ; and upon sec. 20, rule 12 (" on every floor, except the lowest floor, such slab shall be placed wholly upon stone or iron bearers, or upon brick trimmers, but on the lowest floor it may be bedded on the solid ground ") he thought that if no underground room were contemplated this provision would be superfluous ; and upon sec. 23, rules 1 and 3, (" 1. Every habitable room hereafter constructed in any building, except rooms in the roof thereof, and cellars, and underground rooms, shall be in every part at the least seven feet in height from the floor to the ceiling." "3. Cellars and underground rooms shall be constructed in manner directed by the said Act for the better Local Management of the Metropolis ") the magistrate remarked that if the definition were correct, where could the "cellars and underground rooms" be constructed ? The magistrate decided, therefore, in favour of the plaintiff, the District Surveyor of Hammersmith.

DAMP EXCLUDER.

A MODE of excluding damp which has the advantage of being elaborate, if it be neither simple nor inexpensive, has been tested at Paris. For the first coating of the work to be protected the inventor takes, according to the *Scientific Review*, linseed oil, and to every 200lb. he adds 20lb. of litharge in powder, 10lb. of minium or red lead, 6lb. of umber in calcined stone, 6lb. of alum in powder, and 10lb. of tin in ingot; 30 per cent. of turpentine to be added at the moment of using the composition. The inventor boils the whole during four hours over a slow fire; during the last hour it is, however, requisite that the fire be brisk enough to fuse the tin. For the second coating he uses the same composition, with the addition of 3 per cent. of beeswax and an equal proportion of caoutchouc, boiling the whole for an hour over a slow fire. For the third coating the inventor takes (according to the quantity required, of a suitable consistency to be applied with a brush) red lead, in powder, and calcined ceruse, or white lead ground with oil and turpentine in equal quantity, and 5 per cent. of litharge in an impalpable powder; when diluted these ingredients are mixed with the same composition as used for the second coating, but at an interval of twenty-four hours. And for the fourth coating he prepares a composition as for the first coating, and when the four hours' heating have expired, he, at the expiration of an hour, draws it off clear. He then dissolves 40 per cent. of hard gum copal, and when in fusion throws the first composition into it. While still warm and clear the inventor then adds 40 per cent. of warm turpentine, stirs the whole well together, adds 10 per cent. of ceruse, or white lead calcined and ground with turpentine, and then applies the preparation cold with a brush over coating No. 3.

SCHOOLS OF ART.

Barnstaple.—The annual distribution of prizes to the successful students of the Science and Art classes of the Barnstaple Literary and Scientific Institution took place on Friday week. From the report read by Mr. Thomas Mackrell, the secretary, it appeared that during the past year there had been an increase in the number of pupils attending, and improvement in every department of study. In illustration of the large amount of work done in the school, the report referred to the fact that 520 drawings, in forty sets, were sent for examination to London, and thirty sets were pronounced "good," and two, those of Messrs. Hodge & Brannam, were deemed worthy of a Queen's prize.

Metropolitan Evening Drawing-Classes.—We have received a prospectus of the various evening science classes for drawing conducted by Mr. Parton Parry (assisted by Mr. H. Adams and Mr. W. Machen) in connection with the Science and Art Department. The syllabus of subjects comprises (1) geometrical drawing, (2) machine drawing, and (3) building construction, or architectural drawing, the last section being presided over by Mr. Machen. The classes are held as follows:—South-Western Railway Literary Institute, Wandsworth-road, every Monday evening; Trinity Schools, Swan-street, Dover-road, every Tuesday evening; Mile-end schools, Stepney-green, every Wednesday evening; Christ Church National Schools, Ossulstone-street, Somers-town, every Thursday evening; and at S. Matthew's Institute, Denmark-road, Camberwell, every Friday evening.

ARCHÆOLOGICAL.

Discovery of Fresco-Painting at Chaldon Church, Surrey.—On Sunday week the parish church of Chaldon, Surrey, which has been for some time closed for repairs and restoration, was re-opened for service. Previous to the work being commenced, the church was in a terrible state of dirt and decay, the seats and pews were of all heights and ages, the walls were crumbling away from neglect and damp, and the building was unfitted to serve as a place of worship. In scraping the west wall during the course of the restoration, the workmen brought to light several figures in colour, which being shown to the rector, the Rev. H. Shepherd, every care was taken to remove the coating of whitewash without damaging the painting beneath. The architect and rector communicated with the Surrey Archæological Society, and, under the superintendence of Mr. Austin and Mr. Waller, the fresco has been repaired. It represents the ladder of eternal life, with the punishment of the wicked, the weighing of souls, the advent of Christ, and the downfall of Satan. Drawings and photographs of the work have been taken, and a full explanation of the allegories is being prepared for the use of the members of the Surrey Archæological Society by the hon. secretary, for publication in the next volume of "Transactions." The fresco is said to be a very fine one, and of the date of about 1200 A.D.

The Kellythorpe Tumulus.—The prominent object on the Yorkshire Wolds known as the Kellythorpe Tumulus, between Beverley and Driffield, is being explored by Mr. J. R. Mortimer, of Driffield. Nineteen years ago a partial examination was made, when a cist of large stones, containing what was supposed to be the remains of a British chieftain, was found. The skull and a bone weapon studded with native gold were taken, and the rest re-interred. The cist has been recovered, and is to be re-erected at Driffield, as an illustration of the ancient mode of burial. In the tumulus there have been, however, primary and secondary interments, and Mr. Mortimer has already found several skeletons, interred mostly with a flexure of some part of the body, with heads in every direction. The accompaniments of iron knives, bronze buckles, &c., indicate these later interments to have been Anglo-Saxon. The Rev. Canon Greenwell, of Durham; Lord Rosehill; Mr. J. W. Franks, British Museum; Mr. Cadogan, Brenkburn Priory; Rev. C. W. Lukis, Wath, Ripon; and Mr. Tindall, Bridlington, are also engaged in opening tumuli at Rudstone, Bridlington, on the estate of Sir Henry Boynton.

COMPETITION.

Fan Competition.—Her Majesty the Queen has been graciously pleased to notify to Her Majesty's Commissioners her intention to offer a prize of £40 (1,000f.) for the best fan exhibited in the International Exhibition of 1871, being either a work of painting or carving, or a combination of both, and executed by a female artist or artists under 25 years of age, subject to certain conditions. Mrs. Herbert Taylor offers a prize of £25 for the second best fan. The Lady Cornelia Guest and the Baroness Meyer de Rothschild each offer a prize of £10 for the two fans next in the order of merit. These prizes will be awarded subject to the same conditions as those decided on by Her Majesty for the first prize.

Building Intelligence.

CHURCHES AND CHAPELS.

Baddesley Clinton.—On Tuesday week the new (Roman) Catholic Church, dedicated to S. Francis, and connected with the Convent of "Poor Clares," was formally opened. The cost of the structure is about £2,000. The building consists of a narthex or lean-to entrance, a baptistry, large nave, chancel, organ loft, and nuns' choir with sacristies, &c. The length of the building is 128ft. by 33ft. in width, and the height to the apex of roof is 44ft. The building is surmounted by a bell turret or flêche 40ft. high above the roof. The sitting accommodation consists of two rows of open benches. The architect was Mr. Benjamin Bucknill, of Swansea; and the builder, Mr. J. Hall Clark, of Warwick.

Blackburn.—On Saturday last the foundation stone of a new church in Blackburn was laid. It will contain sittings for 850 persons, half the seats to be free. The architects are Messrs. Stevens and Robinson, of Derby.

Ely Cathedral.—For some time past extensive and important works, under the superintendence of Mr. G. G. Scott, have been in progress at Ely Cathedral. They consist chiefly of what is called the under-pinning of the south transept, and the restoration of that department generally. The settlement of the building is supposed to arise from the drainage of the city. The choir as well as the transept has been affected by it. The tower at the west corner has likewise long exhibited signs of settlement; with a view to strengthen it, it has been girded up with wrought-iron bands of very great strength, and this, it is supposed, has secured the stability of the tower for generations to come.

Easingwold.—S. John's Roman Catholic Church, Easingwold, was re-opened on the 25th ult., after extensive alterations. Among the new works is a new altar, from a design by Mr. Joseph Hansom, jun.

Furtho.—This interesting little church, dedicated to S. Bartholomew, has just undergone a partial restoration. The walls internally have been stripped of whitewash, the font cleaned, the string-courses made good where defective, the pitch of the nave roof raised, and open benches of a simple character substituted for the old pews which were much decayed. A new pulpit has been added from the designs of Mr. E. Swinfen Harris, jun. architect, of London. The works have been well carried out by Mr. Walpole, builder, of Stoney Stratford.

Leavesden.—The ceremony of consecration of the chapel and burial-ground, combined with what may be termed the official opening of the new Metropolitan District Asylum for the Imbecile Poor of London, at Leavesden Woodside, near Watford, took place recently. The Leavesden Asylum is beautifully situated on rising ground, about four miles from Watford, and lying between that town and King's Langley. The works have been carried out and the entire building and fittings, furniture, &c., completed at a less cost than the estimates—viz., £135,570, the estimated cost being £136,000. The building, or rather buildings, are designed to accommodate 1,620 patients, 730 males and 890 females, the average cost being thus £77 per bed, all inclusive, with a staff of 70 officers. The grounds are very tastefully laid out, and there is a kitchen garden of 7½ acres. The asylum is built on the block principle, with Nottingham and Leicester red and yellow pressed bricks, and has an exceedingly light and pleasing appearance. The central or administrative block extends from the south front, facing the road to the lower part of the ground northwards, and is occupied by the medical and official departments, stores, enginery, laundry, &c. There are on the female side five general blocks, each for 160 patients, 105ft. by 38ft., and an infirmary block for 60 patients. On the male side are four blocks for 160 each, and an infirmary block, the whole being connected with covered corridors. The extreme length of the corridors from the kitchen to the most distant block is 180 yards on the female and 138 on the male side. The chapel, which will accommodate a congregation of 600 persons, is placed on the left of the administrative block in the frontage. Messrs. Giles & Biven are the architects. Mr. Henshaw is the builder, and while the building estimate was £85,954, the actual cost of building has been £85,700, or £245 less than the estimate.

Lincoln.—S. Andrew's Church, Lincoln, was opened on the 29th ult. The church has been built from a design by Mr. J. H. Hakewill, architect, of South Molton-street. The total length of nave and chancel is 120ft., and the width of the church including aisles, is 60ft. Accommodation afforded for 1,000 worshippers. The height of tower and spire when complete will be 125ft. The whole of the church is paved with Minton's tiles and the font is of Caen stone, supported by Devonshire marble columns. Mr. J. Brown, of Grimsby, was the general contractor, and Mr. Isaac Prowles the clerk of the works. The cost, exclusive of site, has been £7,000.

Low Moor.—S. Paul's Church, Low Moor, recently consecrated by the Bishop of Manchester, has just received an addition in the shape of five tablets for the reredos. The frame enclosing the tablets is of carved oak, to harmonise with the style of the church, and the tablets are of perforated zinc. The tablets contain, in illuminated characters, the Decalogue, the Lord's Prayer, the Apostles' Creed, &c., and were designed and executed by Mr. W. H. Cunliffe, decorative artist, King-street, Blackburn.

Notting-hill.—The (Roman) Catholic Church of S. Francis, Notting-hill, has just received the additional adornment of a set of "Stations of the Cross." These stations, which are painted upon slabs of slate let into the wall, are all the work of Mr. N. Westlake. The style of painting chosen by the artist is a kind of modification of the German School of the sixteenth century.

St. James's.—The Western Synagogue, S. Alban's-place, S. James's, S.W., built in the year 1828, has just been entirely overhauled and re-decorated, which has totally changed its former dingy and dull appearance. The gilding throughout has not been too lavishly supplied. The rails to the ark are entirely gilt, and, with the solid black base, and dark marble pedestals of the Corinthian columns, with their capitals also gilt, are most effective, and much aided by the reflection arising from the amber light over the ark. Instead of the old gas chandeliers and burners, and the three massive brass candelabra and their heavy chains, which formerly lighted the building, three sunlights have been substituted. The embroidered velvet curtain and fittings for the ark, &c., together with the cushions are all new, and carried out in harmony with the general character of the embellishment by Messrs. R. Abraham & Sons, of Lisle-street, Leicester-square. The whole of the flooring is covered with kamptulicon of extra thickness, by Messrs. Gough & Son. Messrs. Buchan & Son, of Southampton, were the contractors for the repairs, painting, and decorations, and Messrs. Hulett & Co. have executed the gas works. The expense of the whole of the works has been defrayed by Moss Isaacs, Esq. Mr. J. D. Hayton, of Whitehall, has had the superintendence of the works as architect.

SHREWSBURY.—A new church, schools, and vicarage for Shrewsbury, were commenced in North-street, Castle-fields, last Monday week. The work is to be carried on from plans and designs by Mr. E. Haycock, jun., architect, and is to be a stone edifice, something similar in construction to S. Alkmund's, described a week or two back. The church is to be dedicated to S. John the Evangelist. The contractors are Messrs. Bowdler and Darlington.

TAMWORTH.—The foundation stone of a new church was laid at Dosthill, near Tamworth, on Wednesday week. The new edifice will cost about £850; and will be from a design by Mr. Holmes, architect, of Birmingham and Burton-on-Trent. The building will be of stone, and is dedicated to S. Paul.

THORNDON.—The parish church of All Saints, Thorndon, was re-opened on Thursday week. The church was originally a building in the Decorated style of architecture, but at some period, probably in the seventeenth century, windows had been inserted in the nave of a Perpendicular character. There is little of elaborate ornament to be seen in any of the work, and the nave and chancel are to all outward appearance one building, and without aisles. Very little has been done to the exterior of the edifice, and some shabby patches of brickwork in the north side still call for removal before the work of restoration can be said to have been entirely completed. The roof has been thoroughly restored, and is now a very pretty example of a waggon roof of the Decorated period. The reredos is a carving in oak in three compartments, or three canopied niches. The total cost of the works recently completed is about £1,100. Mr. R. M. Phipson has been the architect, and Mr. Grimwood, of Weybread, the builder.

THURSTONLAND.—On Monday week the Bishop of Ripon consecrated a new church, to be named S. Thomas, at Thurstonland, the foundation stone of which was laid about eighteen months ago. The church, in architectural design, is Old English, and is a stone structure, capable of seating 380 people. There are two main entrances on the south side, one leading through the basement of the tower and the other at the extreme end of the south wall. The seats are open and free. The total cost of the church will be a about £3,000. The architects are Messrs. Mallinson & Barber, of Halifax.

THORPE MORIEUX. — The parish church of Thorpe Morieux, Suffolk, was re-opened on Wednesday week after restoration. The church is of three different styles, which are more distinctly marked than in many similar buildings; the chancel is Early Decorated of the beginning of the twelfth century; the body of the church (there are no aisles) of Later Decorated work, and the tower Perpendicular. The porch, an Early Perpendicular one, has been very carefully attended to. The lower half was of old brick, which has been rebuilt in flint and stone quoins, with all the fine open tracery panel work, and the verge board carefully restored. A new vestry has been built on the old foundations, with lancet windows of stone found in the building. New roofs have been erected with floriated crosses at the apex of each gable. The chancel roof is a waggon-panelled one; that of the nave is open-timbered, with good rafters and tie-beams. All the walls were attended to and partly rebuilt, and the rubble and stone quoins shown externally, and the walls re-plastered inside. It is very curious that the church is built on a slope downwards from the tower, so that the seats in that part appear when looked at from the east end arranged as a graduated gallery. Inside the rood staircase were discovered fragments of a rich vine-pattern piscina, with projecting bracket, which has been carefully restored and inserted in the south wall. Some of the fragments of carving found in different places have been worked into a dwarf rood-screen. Mr. J. D. Wyatt was the architect, and Mr. H. W. Andrews, of Bury, the builder.

WOTTON CHURCH.—A new reredos, the gift of the rector, the Rev. E. B. Evelyn, has recently been placed in Wotton Church. The carving is executed in chalk, and the framework of the panels is of Reigate fire-stone, being the materials used in the construction of the church. The design consists of three panels; in the centre one of which is a painting of the Crucifixion by Mr. N. Westlake. The side panels each contain six quatrefoils with the chalice and fleurdelys, the emblems of the Blessed Virgin and S. John, to whom the church is dedicated. The emblems are upon a gold ground, and the quatrefoils and framework sage-green and claret colour. The reredos and the chromatic decorations (the gift of Mr. C. Randell), are from the designs of Mr Gilbert R. Redgrave, architect, of Kensington, London.

BUILDINGS.

ROTHWELL.—A new free grammar school has been opened at Rothwell. It is built by Messrs. Barlow and Butlin, builders, of Rothwell, from a design by the rector. The school is lined with Harborough pressed bricks, the external material being "chopped" native stone, with white stone quoins. The estimated cost of the new building is £650.

TAUNTON.—The new buildings for Taunton College School were opened on Wednesday week. Only a portion of the college has as yet been erected, for want of funds. The site is near the town, on the Shoreditch-road. Accommodation will be provided for 120 boarders. The college is divided into two complete blocks by a lobby. In each block are twelve studies, two boarders' common-rooms, and a master's room. On the upper floor of each are two dormitories, 60ft. long, a master's room, bath, &c. The schoolroom is 90ft. by 30ft. There are also provided classrooms, a day-boarders' common-room, masters' common-room, dining-room, sick-room, and other apartments. A head-master's house, two more blocks for boarders, and a chapel on the south side, library, museum, laboratories, and school of art are among the buildings that are to be added at some future time. A botanic garden of two acres in extent is also to be laid out, and a swimming bath, gymnasium, workshops for the boys, and a racquet court are to be provided. A temporary library, museum, and laboratory have been fitted up, and an iron chapel has been erected for present use. Mr. Giles, of London, is the architect; and Mr. Spiller, of Taunton, the builder.

THE NEW THEATRE IN THE STRAND.—The new theatre in the Strand, named the Opera Comique, will, it is anticipated, be opened to-morrow (Saturday) week, the 22nd inst. The decorations are very far advanced, and besides these there only remain the scenery and upholsterers' work to be added to give an air of completeness to the interior. The bulk of the decorative work is of carton pierre or composition, with a profusion of gilding on a white or nearly white ground. The ceiling has a shallow dome of perforated work for its central feature, and in this dome is suspended a sunlight. The ceiling is also divided by boldly projecting gilt bands or mouldings into several large panels or spaces, which, with the space over the proscenium, are decorated with allegorical paintings in oil by Mr. Ballard. The general decorative works are by Mr. Bradwell, of Great Portland-street, and the gas fittings are by Mr. Matthews. Great attention has been paid in planning the house to secure a good view of the stage from every seat, and a commendable and by no means a minor feature consists in the doors of the various entrances being made to swing both backward and forward, so that in the event of a fire or other panic they would offer no obstacle to a speedy clearance of the building. Some further particulars of the theatre were given in the BUILDING NEWS for August 26 last.

WALSALL. — S. Peter's new schools, Walsall, were formally opened on Monday. They are intended to accommodate 270 girls and infants. The exterior of the building is of red brick, with stone dressings, and bands of coloured brick. The architect is Mr. Ralph Chamberlain, of Lichfield-street, Walsall. The builder who has carried out the work is Mr. Adkins, also of Walsall. The amount of his contract was £1,200. The land cost £250 additional.

WOOD GREEN.—The foundation stone of new wings to the Printers' Almshouses, at Wood Green, was laid on Saturday. The north wing, when completed, will contain residences for ten married couples, and the south side apartments for six widows. Mr. Charles Bell is the architect; Mr. W. Henshaw the builder; and Mr. Case the clerk of the works.

YORK.—The Archbishop formally opened, on the 6th inst., the new schools of S. Denis and S. George's parish. The elevation towards the church is of red brick with stone dressings, and is of a plain and unpretending character. The buildings were designed and carried out under the superintendence of Mr. Rawlins Gould, architect, and the work was executed by local men.

NOTICE.

WITH the aid of the new postal arrangements, which came into operation on the 1st inst., the BUILDING NEWS will in future be supplied through the post at 15s. per annum, instead of 17s. 4d. as hitherto. The halfpenny postal card will also be found useful to those who have scraps of building information, tenders, intercommunication queries and replies, &c., to send.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

TO OUR READERS.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

Letters relating to advertisements and the ordinary business of the Paper should be addressed to the EDITOR, 31, TAVISTOCK STREET, COVENT GARDEN, W.C.

Advertisements for the current week must reach the office not later than 5 p.m on Thursday.

RECEIVED.—W. D., A. S. H., C. N. F., R. H., W. M. E., Drake Bros., D. H. & J. L., T. W., J. F. & Sons, A. W., G. S. A., C. W. & Co., W. P., C. S., G. L., J. & W., R. H. & Sons, T. A. J., H. & R., L. & N., R. S. & Son., W. F. P., W. B. & Co., R. Y. T., W. M. P., G. B., J. A. A., J. J. C. & Co.

"A MANCHESTER ARCHITECT" in a letter to us, says:—"You see there is a regular agitation rising about London architects, their builders, and their clients. The clients seem to me to be getting the worst of it by far."

W. T. BROWN.—Sketch to hand; don't send description.

W. BINGLEY.—The sketch was returned.

A. F.—Sketches returned.

A. T. W.—The numbers were forwarded.

J. W. DUFFIELD.—Cases for any volumes, from Vol. X. inclusive, 2s. each.

J. LANGHAM.—Sketch returned.

W. T. H.—Consult indexes.

C. S.—By writing to the American agent, whose name and address were given.

Correspondence.

A BONUS OFFERED.

To the Editor of the BUILDING NEWS.

SIR,—I enclose an advertisement cut from this day's *Telegraph*, thinking it may interest those who do business in this line. In pity pray for the client.—I am, &c.,

J. W. DUFFIELD.

Park-lane, Kensington Gore, W., October 10.

TO ARCHITECTS.—A BUILDER that is slack of business would share the profits, or give a bonus, for a GOOD JOB.—Address W. X., Post-office, ——— street, Pimlico, S.W.

TENDERING WITH A VENGEANCE.

SIR,—I think the subjoined tenders worthy a place in your valuable paper as a specimen of "tendering with a vengeance." The surveyor's estimate was £2,200, quantities not supplied.

For laying the sewage mains for the Local Board of Health, Leamington:—

	£	s.	d.
Bond, Leamington	£2146	9	8
Stanley, Leamington	1737	5	0
Marriott, Coventry	1600	0	0
Warwick, Leamington	1549	10	0
Clark, Warwick	1350	0	0
Green, Leamington	1263	0	0
Boon, Coventry	1230	0	0
Gascoyne, Leamington (accepted)	963	9	6
Childs, Rugby	955	0	0

I am &c., F. B. R.

AN EXPENSIVE SHAFT.

SIR,—In the BUILDING NEWS of the 30th ult., page 246, there is an article under this head. Would you or some one be kind enough to answer me a question or two? First, in using the pneumatic apparatus is it not a dangerous employment for the workmen? Second, would it not require great caution in letting the men out of that highly pressed atmosphere into the common atmosphere, after being under such a pressure for the space of four hours?—I am, &c., R. W.

Middlesbro'-on-Tees, October 8.

Intercommunication.

◆

QUESTIONS.

[1989] BATH BRICK.—Can any of your readers kindly inform me of the address of a Bath brick manufacturer ?—IRONMONGER.

[1990] REMOVING INDIAN INK.—Will any of your readers kindly inform me how I can take Indian ink lines out of tracing paper? Chloride of lime will not touch them. The tracing is mounted on drawing paper and canvas.—G. S. A.

[1991] STRIKES AND LOCK-OUTS.—Can any reader inform me of the title, date, and publisher of a pamphlet by Alfred Waterhouse on "Strikes and Lock Outs"? It is referred to in *Good Words* for July, 1865.—T. L. W.

[1992] SURVEYING.—On measuring a growing crop in a field that has a sloping or undulating surface, should the measurements of the length and breadth be taken as on a level line, or as the ground slopes ?—TOM PINCH.

[1993] NEW ELEMENTS OF HANDRAILING.—After finding the bevel, viz., the angle K S T, it goes on : "Now apply this bevel to the sides of the mortise R; let its stock rest on the surface of the stuff and at right angles with P H, as shown on the left, then the blade and the sides of the mortise agree." Will some one explain this more clearly? Again it follows: "To ascertain the accuracy of this bevel extend one side of R to cut the edge of the stuff at D. Now let the stock of the bevel V rest on the surface and mark the edge by its blade, then the line on the edge and the side of the mortise agree." But they do not agree, for the bevel in this case is an angle of about 61° and the angle A V Q is an angle of about 48°. Now the angle A V Q is equal to the angle A L Z, therefore the angle A L Z is not equal to the found bevel, the angle K S T. Perhaps some one can explain this and oblige.—H. R.

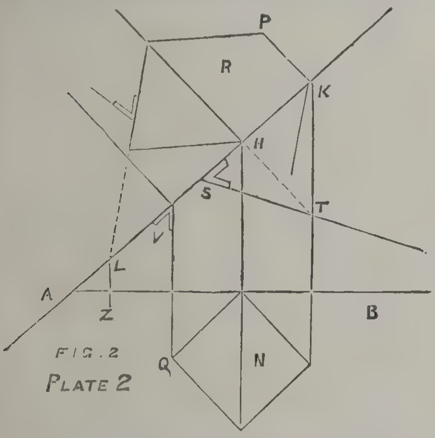


FIG. 2
PLATE 2

["H. R.," instead of drawing the above diagram on the postal card, drew it on paper and stuck it on the card. This is contrary to regulation, and we have had to pay an extra penny. Nothing must be attached to halfpenny postal cards.—ED. B. N.]

[1994] A SUGGESTION.—Can you inform me whether the vulcanite so much used for chains, set-squares, &c., has yet been worked up as a moulding ? I think it would be a very serviceable article if so used round door panels, &c., especially on stained and varnished work, if relieved by gilding. Perhaps same enterprising maker will take the hint.—W. T. H.

[1995] INTERNATIONAL EXHIBITION, 1871.—There is a notice published that all artists, &c., wishing to contribute works to the forthcoming exhibition are to send in notice before November 10th. Could you or any of your readers inform me please as to whom and where notice is to be given, as the published announcement does not state?—AMBITION.

[1996] UNANSWERED QUERY.—Will some reader of your paper be kind enough to inform me the method of obtaining the profile of mouldings, such as string-courses, cornices, architraves, &c.?—FRANK CHESSELL.

REPLIES.

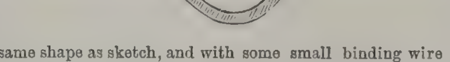
[1955] OPTICAL SQUARE.—Your correspondent "B. J." must have made some mistake, as the optical square is never used for measuring buildings. Its sole and especial use is to lay off perpendicular offsets when they are too long to be correctly laid out with the chain or offset staff. With regard to the second part of the question, it is superfluous. The two glasses or mirrors in an optical square are accurately fixed at an angle of 45° by the maker, and cannot get out of order, save by actual wilful damage. However, if it should be necessary to test its accuracy, it can be easily done, by laying off a right angle with some other instrument, such as a theodolite or pocket sextant, and checking it with the optical square. But if the square be purchased of a good maker it will never get out of adjustment.—KINCADE.

[1956] THE ARCHITECTURAL ASSOCIATION.—It depends upon what object induces you to join. The motives which actuate people in becoming members of professional and scientific bodies are various. Some join with expectations of deriving pecuniary benefit, and are nearly always disappointed, as they deserve to be; others are content to join for the mere sake of being enrolled on the list; while others again, the minority, become members on account of the instruction, information, and collateral advantages accruing to all who join societies and institutions with the proper motives.—A. P.

[1957] IRISH COUNTY SURVEYORSHIPS.—I should say not. In the last examination, when two vacancies were filled up, it was especially required in the standard for admission that the candidates must have had a practical acquaintance with engineering works on a large scale. All information can be obtained by writing to the Civil Service Commissioners, Cannon-row, Westminster.—TETE.

[1958] KENTISH RAG.—The stone may be bought at the Brunswick Wharf, Vauxhall, or at South Wharf, Paddington. It can be hammer-dressed, picked, and tooled, but is not suited for mouldings or fine work, being a totally different kind of stone from Bath or Caen stone. A cubic yard of random walling, for which it is much used in and about London, particularly for churches, can be built for 14s. 6d., or thereabouts.—METAL.

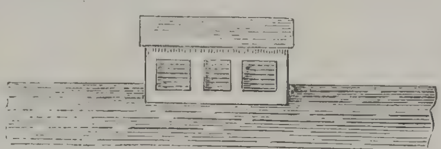
[1969] BRAZING BAND SAWS.—In reply to "Wood," 1. He must make a splice with a file on flat way of saw, the length of two teeth. 2. Get a piece of flat iron, and bend same shape as sketch, and with some small binding wire bind the saw perfectly straight and firm to flat iron, so that the splice may come directly over the curve. 3. Wet the splice with clean water and rub on some powdered borax. 4. Make a stiff paste with spelter and borax mixed with water. Take a piece the size of a small nut and lay on top of splice. Put the splice between two pieces of charcoal, and with a blowpipe direct a steady flame from a gas-jet on the paste. By this method I have brazed band saws and many other things.—J. BOGGUST.



[1977] DIAMETER OF SPHERE.—Divide the square of half the diameter of the base of the frustrum by the height, and to the quotient add the height; the sum is the diameter of the sphere. Thus with the dimensions given: $\frac{24^2}{9} + 9 = 73$in., the diameter of the sphere.—P. Q. P.

[1981] RED BRONZING.—This is done by the same process as green bronzing, but using red lacquer.—KAPPA.

[1985] MALTING KILN.—If "Original Subscriber" had quoted the part of England he came from it would have been easier to answer his query than it is, but if he is in Yorkshire, say the West Riding he would be able to see some sample malthouses at Leeds, Wakefield, Milford Junction, Mirfield, &c. It is scarcely possible nor yet fair to the general readers to give a lengthened account of the different methods of working in the neighbouohood of the places before mentioned, and I also think that he will find some little difficulty in getting into the model malthouses, as the owners, as a rule, do not like strangers about the premises. However, if he will publish his address I shall be happy to give him any information I can on this subject. In reply to the second part of his question, I cannot say that I consider the old-fashioned cowl, if properly made at all unsightly, and I have never found any other system answer as well, though I have seen chimneys of slate on the ridge of drying kilns about 18in. square by 18in. high, and about 2 yards apart and gain a kind of wooden ventilator with a slated roof, thus:



but I have not found that they have answered as well as the old-fashioned cowls.—IXION.

◆

WATER SUPPLY AND SANITARY MATTERS.

BIDEFORD.—We read in the *North Devon Journal* that the inspector of nuisances in the town of Bideford has lately been very actively engaged in making a house-to-house visitation in accordance with the recommendation of the Local Board, and as the result of his visits many existing nuisances have been removed or are in course of removal, while at the same time "some unpleasant facts in reference to defective drainage and deficient water supply have been disclosed." We can quite believe it, and would just hint that by taking similar action the Local Boards of places other than Bideford (London not excepted) would discover similar defects and deficiencies. The Local Board of Bideford has also invited Mr. Baldwin Latham to visit the town to give his opinion on the proposed alteration of the drainage plans, the pitching of the embankment, and the deviation of the culvert.

CHELTENHAM.—The Cheltenham Commissioners having recently completed works and purchased a farm for the disposal of the town sewage by irrigation, the first yearly letting of the irrigated land was effected by auction on Thursday fortnight. The land is all ordinary grass land, to which, as yet, the sewage is but imperfectly applied, and comprises 119 acres. It was divided into six lots, which let at prices varying from £5 18s. to £8 13s. per acre, and realised a total of nearly £900. The yearly cost to the town for interest and repayment of loan in thirty years is £1,100, so that if the rent of the land should remain stationary the town would only be put to a cost of £200 a year, and own the farm free at the end of thirty years, as against an expense of nearly £1,000 a year before incurred with very unsatisfactory results for deodorising. But, in addition to the rent of the land, the Commissioners apply the sewage to adjacent farms at a certain charge per acre, and have reserved for experiment several acres of their own land which have been broken up for rye grass, and are expected to realise a profit of at least £20 per acre, so that the farm will probably be conducted without loss, even during the first year.

LINCOLN.—A deputation of the Lincoln Local Board recently had an interview with the directors of the Great Northern Company, on the subject of the river and the obtaining of a larger supply of water from the Trent at Torksey, with the view of securing a constant flow through the city in times of drought. The deputation proposed to the directors to increase their pumping powers at Torksey, on condition that they paid them interest on the necessary outlay—about £600—and the expense of pumping when water is required, and these terms were at once acceded to by the directors.

THE DRAINAGE OF MIDDLESBOROUGH.—Mr. Robert Morgan, C.E., of the Local Government Act Office, has made his report upon the two schemes for the drainage of Middlesborough. He says there are 7,000 houses in the borough, of which 406 only have water-closets, the remainder having covered ashpits. The ex-borough surveyor (Mr. John Dunning) estimates the cost of his scheme at £2[illegible],669 16s. 6d., and the borough surveyor (Mr. Latham) estimates the cost of his scheme at £17,641 5s., but to this sum must be added the cost of sewers in the north portion of the town, viz., £3,170, which makes the total £20,811 5s. After fully explaining the schemes, Mr. Morgan says—"Of the two schemes before me, Mr. Dunning's deals most comprehensively with the requirements of the town, and may, with certain modifications, additions, and combinations at certain points with Mr. Latham's scheme, be adopted by the town council." Mr. Morgan concludes his report as follows:—"I therefore recommend that Mr. Dunning's plan for the sewerage of Middlesborough, with the following modifications, be adopted, viz.:—That the position of the main outfall sewer (8ft. diameter), between the toll bar and the river Tees be abandoned, and in lieu thereof, that the sewer (7ft. diameter), along the Fleet-road, be reduced in diameter, and continued in a straight line, across the strip of land between the Middlesborough and Redcar Railway and the Ormesby Beck, where tanks may be advantageously constructed, and pumping engines erected. That, if the tanks provided for the storage of sewage matter are constructed, the main sewers will no longer be used for that purpose, and their dimensions therefore may be considerably decreased. That a sewer be provided for the drainage of New Linthorpe, and for those parts of the borough now inefficiently sewered and not included in Mr. Dunning's scheme, and that street gullies be laid down to connect therewith."

THE NORWICH SEWERAGE.—At a late meeting of the Norwich Town Council, the Board of Health was authorised to require all owners and occupiers of property at present draining into the river or cesspools forthwith to discontinue the same, and to construct a proper communication with the common sewer.

◆

LAND AND BUILDING SOCIETIES.

THE CONSERVATIVE LAND SOCIETY.—The report of the directors, submitted to the shareholders at the last quarterly meeting, at the Norfolk-street offices, gives the receipts for the quarter, which were £36,693 7s.; for the financial year ended at Michaelmas, £133,276 15s. 11d.; and the grand totals, £1,583,359 15s. 2d. The withdrawals were £399,971 3s. 9d. The reserve fund is £10,500. The auditors were re-elected, and the report adopted.

◆

LEGAL INTELLIGENCE.

ARCHBOLD v. MARGERISON.—A PLASTERER'S CLAIM.—In this case, heard at the Blackburn County Court on Monday week, the plaintiff was a plasterer and the defendant a joiner and builder. Both parties reside in Blackburn. The action was brought to recover £13 4s. 6d. for work and labour done in plastering houses for the defendant. The plaintiff had had several contracts with the defendant. With regard to some of the work it had been completed; but, with regard to the last houses, the plaintiff was to receive money on account every week. After a time the defendant refused to pay any more money, and the work had to be stopped. The plaintiff lived in one of defendant's houses, and a short time ago the defendant put a distress in, which was alleged to be excessive, and £1 10s., the money sold for, claimed back. The defendant alleged that the plaintiff left the houses before they were finished, and he paid a considerable sum to have them completed; he denied that the distress was excessive. His Honour, after hearing the evidence, said he did not think there was any breach of duty on the part of the defendant; but he thought if he had stopped the plaintiff, as alleged, and refused to advance more money, the plaintiff would be entitled to recover. He thought the amount claimed was excessive, and he reduced it for the buildings to £2 2s.; but he gave nothing for the distress, which he considered correctly taken.

HUMPHRIES *v.* POTTER.—This action (tried in the Bath County Court on the 29th ult., before C. F. D. Caillard, Esq., the judge) was brought to recover the balance of an account of £35 2s. 9d., for masonry work at a chapel at Wellow. The plaintiff's counsel suggested that the case should be referred to the decision of some surveyor, but the defendant's counsel said that his client had previously made that offer, which was refused, and he now wished for His Honour's decision. It appeared from the ev i [illegible] of the plaintiff that he had been engaged to do the who [illegible] of the ordinary masonry work of the chapel at 2s. pe perch, and for the freestone work he was to be paid in addition. The stone ought to have been ready for use, whereas he was obliged to prepare it himself. He had also to make numerous alterations, and for extra work he had claimed £5. In cross-examination, he admitted having undertaken a part of the masonry at 1s. 4d. per perch, and the freestone work at 2½d. per foot. He had charged 2s. per perch for the whole of the masonry. At a meeting of the chapel trustees he had given a statement of particulars, but on finding that the total was against him wished to alter it. The total was £23 18s. 4d., and he had received £26 5s. before the work was finished. The trustees agreed to let him retain the balance. The plaintiff's son partially corroborated his statement. Mr. Atwell, builder, stated that he had measured the work, and estimated its value at £33. In answer to the defendant's counsel, Mr. Atwell said he had valued the whole of the masonry at 2s. per perch, and the freestone work at 9d. per foot. The plaintiff had not told him that the contract price was 2½d. per foot. For the defence it was contended that in March, 1869, the trustees of the chapel (of whom Mr. Potter was one) directed Mr. Potter and a man named Horrell to arrange with the plaintiff for the erection of the ordinary masonry at 2s. per perch, and the freestone work at 2½d. per foot, and this the plaintiff had undertaken at those prices. It was subsequently found that additional masonry was needed, which he agreed to do at 1s. 4d. per perch. Before the work was finished he had received £26 5s., and on his applying for further payments the trustees and himself met and went through the items together. The total showed that he was entitled to £23 18s. 4d. only, but they allowed him to retain the difference in order to avoid dispute. The stone was supplied to the plaintiff ready prepared, and if he had done anything further he had done it without instructions. For the alterations and extras he had already been paid, and the evidence would show that he had made this claim because the work had proved less profitable than he had expected. Several witnesses having been called, His Honour held that the defence had been made out, and that the plaintiff was only entitled to recover an undisputed item of 2s. 9d. Verdict accordingly.

◆

STAINED GLASS.

Castle Hedingham.—Three lancet windows in the east end of the parish church of S. Nicholas, Castle Hedingham, have just been filled with stained glass by Messrs. Hardman and Co. The centre light is illustrative of the Crucifixion, the two side lights representing S. John and the Virgin Mary.

Edinburgh.—A large and handsome stained glass window, subscribed for by a few of the leading members of the congregation, has just been fitted up in the Tron Church. It has a triplet tracery window, divided by a transom, and contains six illustrations, "The Annunciation to the Shepherds," "The Worshipping by the Wise Men," "The Presentation in the Temple," "Christ among the Doctors," "The Baptism," and "The Sermon on the Mount." The whole has been designed and executed by the Messrs. Ballantine. The window will cost about £270.

The Longley Memorial.—The five windows in the west front of the Ripon Cathedral, in which it was decided to place the Longley memorial, have been filled with stained glass by Messrs. Hardman, of Birmingham. The glass consists of a combination of geometrical forms, with the conventional foliage peculiar to the works of the period of the stonework—viz., the twelfth century—worked in the richest and most varied colours.

◆

STATUES, MEMORIALS, ETC.

Cambridge University.—Messrs. Farmer and Brindley, sculptors, London, have just completed five fine figures of Bishop Stillingfleet, Bishop Bateman, Edmund de Gonville, Dr. Caius, and Dr. Perse. The figures are carved out of Bolsover stone, and are excellent representations. The former has been placed in the new chapel of S. John's College, and those of Gonville, Caius, and Bateman in front of the new gateway of that college. They stand 6ft. in height, and are robed. That of Dr. Perse is placed over the approach to the circular staircase in the new court of Caius. Edmund de Gonville founded Caius, and at his death left money for its completion at the disposal of William Bateman, Bishop of Norwich; and Dr. Caius formed the plans of the three gateways intended to inculcate the moral lesson that "Humility and virtue lead to honour."

New Works by Mr. Watts.—Mr. Watts, who has of late given a large share of his energies to the practise of sculpture, has completed the model of a life-sized statue of the late Lord Holland. This will be cast in bronze, and form the chief element of a design which comprises a drinking fountain, and will be temporarily, at least, erected on the south side of Holland Park, a little removed from the Kensington-road. The same artist has nearly completed a full-sized memorial effigy of the late Bishop Lonsdale, which is to be placed under a Gothic canopy, the design of Mr. G. G. Scott, in Lichfield Cathedral.

◆

Our Office Table.

◆

Death of Mr. James Giles, R.S.A.—After a rather protracted illness, this well-known Scottish artist died at his residence, Aberdeen, on Thursday week. James Giles was one of the thirty-five artists who in the year 1838 obtained a charter of incorporation, and were constituted the Royal Scottish Academy of Painting, Sculpture, and Architecture. Of these thirty-five artists only nine are now remaining to us. Six of them have been taken within the last two or three years. Watson Gordon, Graham Gilbert, Horatio Macculloch, Robert Lauder, D. O. Hill, have now been followed by their brother artist, James Giles, and it will be difficult to fill their places.

Confidence in the Application of Asphalte to Flat Roofs.—It is said that the flat roofs at the Albert Hall of Arts and Sciences, and those now in a very forward state at the Horticultural Gardens, South Kensington, will contain nearly 60,000ft. super. of Pyrimont asphalte. Messrs. Lucas Brothers are the contractors.

The Egyptian Court, Crystal Palace.—A collection of Egyptian antiquities, formed by the late Mr. Robert Hay, of Linplum, East Lothian, has been placed in the Egyptian Court at the Crystal Palace, where, with the aid of a catalogue, drawn up by the collector of the relics, and afterwards revised by that distinguished authority on such matters, Mr. Joseph Bonomi, visitors may acquire much reliable information of the religion, manners, and customs of Egypt. Of late, imitations of like articles have been manufactured, no doubt, but Mr. Hay entered on his labours as a collector of antiquities as early as 1828, before the stock of real relics had been exhausted, and while the supply was equal to the demand. The Hay collection may be relied upon. The name of Bonomi would in itself be a guarantee for the genuineness of the relics now exhibited. We need hardly say that a private view afforded but an imperfect opportunity for the study of a subject so profound as that of Egyptian antiquity, as illustrated in over a thousand examples of objects of all sizes, all kinds, and in all sorts of materials, but chiefly in wood, stone, glass, porcelain, bronze, and terra-cotta. Of the subjects we may enumerate divinities, real and doubtful; amulets, trinkets, stamps, mummy figures and mummy cases, tablets and vases, bottles, scarabæi, and papyri.

Waterloo Bridge. — A correspondent calls attention to the state of the drains along Waterloo Bridge. The stench arising from them is truly poisonous. The long continuance of dry weather has exhausted the water in the traps. Until the authorities attend to this he advises the public to avoid passing over it, whenever it is possible to avail themselves of any other bridge.

Decorations at University College. — We understand that Mr. W. Cave Thomas has completed the designs on which he has been for some time engaged for the decoration of the Flaxman Hall, at London University College. The most important consist of three colossal figures of Homer, Pythagoras, and Apelles, as representing Literature, Science, and Art, and are intended to fill the three recessed spaces above the reliefs of Flaxman which adorn the walls. The eight compartments of the dome Mr. Thomas proposes to fill with figures, supporting medallions, containing the greatest names in literature, science, and art. The public is indebted to the Graphic Society for this scheme of decoration. In the adjoining hall of University College, Mr. Armitage has just completed the decoration of the walls with monochrome painting. The first series of pictures occupies one-half the hall, and represents the late Crabb Robinson and his most eminent friends. The second series, occupying the remainder of the hall, represents the founders of the institution.

Damaging Public Structures.—A Severe Punishment.—Our local authorities (says a writer in the *South London Press*) find it necessary to warn persons defacing or injuring public structures of legal consequences, but they go further than this in the country. "A friend informs me that on the numerous small county bridges in Dorsetshire the following notice is placed :—'Any person wilfully injuring any part of this county bridge will be guilty of felony, and, upon conviction, liable to be *transported for life*. By order of the court, T. Fooks.' Why not threaten to hang the offenders out of hand at once? The threat would hardly be more absurdly barbarous in character, or less consistent with the views of the age."

The Metropolitan Board of Works. — At the last meeting of the Metropolitan Board of Works it was stated that Mr. Rutson, private secretary to Mr. Bruce, had withdrawn his letter in reference to the candidature of Mr. Ayrton; and a strong opinion was expressed that Mr. Ayrton, of all the candidates, was the least likely to be appointed.

International Exhibition, 1871.—The painters and decorators are completing their work in the Fine Art Galleries for the International Exhibition of 1871. We understand that it is the intention of Her Majesty's Commissioners to invite artists and exhibitors of all fine art works to inspect these galleries shortly. Manufacturers of brick and tile-making machines intended to be shown in motion at the ensuing Exhibition of 1871 are requested to forward their applications for admission to the secretary, Lieut.-Col. Scott, R.E., specifying the weight, dimensions, and requisito horse-power of each machine to be exhibited.

Chips.

◆

The foundation stone of the new Rushton memorial church (dedicated to All Saints), Bolton-road, Blackburn, was laid on Saturday last.

S. Paul's church, Oswaldtwistle, was opened on Wednesday week. The building is of iron, of Gothic treatment, and seats 600 persons. The cost has been £650.

Messrs. E. Burne Jones and F. W. Burton have resigned their membership of the Old Water Colour Society.

Mr. W. J. O'Driscoll, of the Irish Bar, is engaged in the preparation of a biography of Maclise.

The Martyrs' Memorial Church, S. John-street-road, Clerkenwell, which we illustrated some time since, is nearly completed, and will probably be opened in about two months' time.

An improvement has been effected in Tooley-street, Southwark, by setting back the premises and widening the roadway between Bull-court and Mill-lane.

In a few days the construction of a tramway along the New Kent-road will be commenced.

Negotiations are still pending for the purchase of the site of the parish church of S. Mary, Newington, for the purpose of widening the roadway of Newington Butts.

A public library and museum, presented by Sir Peter Coates to the town of Paisley, was inaugurated last week. This edifice, which has been completed at a cost of £15,000, occupies a central position in High-street.

The new approach to the steam-boat pier at Lambeth Palace will shortly be commenced, the contract having been given to Messrs. Jukes, Coulson, Stokes, & Co., the tender being for £2,476.

The unsightly triangular enclosure at the junction of Union-street, Borough, with the Southwark Bridge-road, known as "Flat Iron-square," is being planted with trees and flowers.

The Wesleyan Chapel, at Measham, Derbyshire, was re-opened on the 25th ult., after alterations which have cost £825.

The parish church of Kniveton, Derbyshire, was recently re-opened, after restoration.

A new organ, built by T. H. Nicholson, of Lincoln, has just been erected in the Wesleyan Chape at Horncastle.

The Crediton Local Board has memorialised the Home Office for power to borrow £2,000, to be devoted to carrying out various local improvements.

A new Congregational Chapel at Abbotsbury, Dorset, was opened on Wednesday week.

The new studios at the Working Men's College, Great Ormond-street, Bloomsbury, are completed. They are large, airy, and well lighted, and supplied with every necessary appliance.

At a meeting of the Court of Common Council, on Thursday week it was stated that the Lord Mayor, on the strength of the medical certificate had granted leave of absence to Mr. Horace Jones the City architect, who was in a very dangerous state of health.

◆

LATEST PRICES OF MATERIALS USED IN CONSTRUCTION.

Timber.

Teak ....load	£12	10	13	10
Quebec, red pine	3	15	4	10
,, yellow pine..	4	0	4	10
St. John N.B. yellow	0	0	0	0
Quebec Oak, white..	6	0	6	10
,, birch........	3	15	5	0
,, elm	4	5	5	5
Dantzic oak	4	10	6	15
,, fir	2	15	4	10
Memel fir	2	15	4	0
Riga..................	3	3	3	10
Swedish	2	13	3	0
Masts, Quebec red pine	4	0	5	5
,, yellow pine..	4	0	5	5
Lathwood, Dantzic, fm	3	10	5	10
,, St. Petersburg	5	10	6	10
Deals, pr C., 12 ft. by 3 by 9 in.,				
Quebec, white spruce	12	0	17	0
St. John, white spruce	12	10	14	0
Yellow pine, per reduced C.				
Canada, 1st quality.	18	0	19	10
2nd do......	12	15	13	10
Archangel, yellow ..	11	10	13	0
St. Petersburg, yel...	12	0	13	0

Finland	£7	0	£8	0
Memel..............	0	0	0	0
Gothenburg, yellow	9	0	11	0
,, white	8	0	9	0
Gefie, yellow........	10	10	12	10
Soderham	8	10	12	0
Christiania, per C., 12 ft. by 3 by 9 in. yellow	10	0	12	10
Flooring boards, per sq. of 1in., first yel	7	6	10	6
First white........	7	0	9	6
Second qualities	6	0	7	0
Pumice Stone pr ton	6	0	8	0
Oils, &c.				
Seal, pale....per tun	36	0	0	0
Sperm body	80	0	0	0
Cod	38	0	38	10
Whale, Sth. Sea, pale	36	0	0	0
Olive, Gallipoli......	48	0	48	10
Cocoanut, Cochin, ton	43	10	44	0
Palm, fine	40	0	0	0
Linseed	30	0	0	0
Rapeseed, Eng. pale..	43	10	0	0
Cottonseed..........	29	0	34	10

Metals.

Lead —

Pig, Foreign	per ton	£17	10	0	£ 0	0	0
,, English W.B.	do	20	0	0	20	5	0
,, Lead Co.	do	19	15	0	20	0	0
,, Other brands	do	18	0	0	18	5	0
Sheet Milled..................	do	20	10	0	0	0	0
Shot, Patent	do	22	0	0	0	0	0
Red or Minium	do	19	15	0	20	10	0
Litharge, W.B.	do	0	0	0	0	0	0
White Dry	do	30	0	0	0	0	0
,, ground in oil	do	0	0	0	0	0	0

Copper :—

British—Cake and Ingot	per ton	£67	10	0	70	0	0
Best Selected	do	69	0	0	70	0	0
Sheet	do	71	0	0	73	0	0
Bottoms	do	75	0	0	0	0	0
Australian	do	68	0	0	71	0	0
Spanish Cake	do	69	0	0	0	0	0

THE BUILDING NEWS.

LONDON, FRIDAY, OCTOBER 21, 1870.

EGYPT AT SYDENHAM.

A GENUINE exhibition of Egyptian antiquities has been opened at the Crystal Palace—that true *epitome mundi*, in all ages and phases. It is not very extensive, nor is it very novel, but it has the advantage of being undoubtedly authentic. We see the ancient people as they lived, as they died, as they were sepulchred. But the collection is not unmixed: it betrays strong and close associations with Greek and Roman Art. We believe that the celebrated antiquary, Mr. Robert Hay, of Linplum, with his colleagues Burton, Arundale, and Bonomi, and the young and enthusiastic Athanasi, did really purpose to collect an Egyptian Museum worthy to be established in the Walhallas and Vaticans of Europe. Nevertheless, up to a particular point, they failed. They hung large walls with photographs and drawings; they saw, and thought they could describe, the monuments—a common illusion on the part of travellers; but, despite their failures, they did one thing,—they discredited the Birmingham rubbish. Many of the objects searched for and found by them are unique, and many more exceptionally fine, and nearly all of interest as representing details of execution or periods of art ranging over an interval of upwards of 4,000 years. That such an illustration is exhibited, in one chamber, on twenty-one tables, at the Crystal Palace, should suffice to draw together thousands who are not quite infatuated by Signor Bottesini or Madame Parepa. The work, upon the whole, was the work of Mr. Hay, although he had associates. He lavished upon it five years of love; he died before the analysis of his Nilotic treasures was completed. The Crystal Palace Company have purchased them from his son, and thus we have 13,000 examples of antique Egyptian life, all authentic, and none from Birmingham—a boast which, we fear, the British Museum itself might not candidly utter. They lift the veil from the religious, social, and domestic life of those curious heathens. They are glossaries on Manetho, and commentaries on Berosus; they tell us what the Greek desired us to know; they fling a light on Plato; they give articulation to the laughter of Juvenal; for they are antiphonic, these relics of the dead—they belong to the past, it is true, but they speak from the past and are audible. Now, taking the twenty-one cases at the Crystal Palace as characteristic of industry and art relative to the period which they represent, no wonder can be exaggerated if we persist in boasting of our modern marvels. There is a statue. It is composed of three metals—bronze in the core, antimony in the head and hands, gold in the eyes and necklace; over all a semi-vitreous paint, representing a dress that clings modestly to the figure. Moreover, when the nameless sculptor completed his task he formed marble eyes and eyebrows. We must not be too sure of our superiority when we view these wonders of, as Tennyson writes, "a day that is dead." Then that head of a girl, perfectly preserved, who must have danced at the Court of the Ptolemies! The myrrh and the aloes are as pure still as when they were gathered in the valley of the Nile three thousand years, or more, earlier before Cleopatra sailed down the Cydnus. The eyes remain, the brains remain, the linen is as if woven last week at Manchester. Less astonishing are the other mummies, with their brain-cavities filled by bitumen, and their eyes of obsidian and ivory; but almost incredible is the stain of henna, red and bright, on a hand that must have been cold generations before the sacred birth which took place when the Star in the East was seen by the Wise Men. It was bad taste to put a modern ring on the forefinger. We pass by "a bag of mummified hair," a "landowner's staff," "three funeral staves," a "Lybian bow," an Egyptian bow still pliant after a lapse of 3,400 years, and a horrible set of "viscera vases." They are of interest, but they illustrate a state of society so remote from our sympathies that it seems impossible to engage any except the most enthusiastic antiquarianism with regard to them. It is for the touch of nature making all humanity kin that we look, and look not in vain; the lady painting a funeral tablet for her husband's grave; the woman flinging away in sorrow the rod with which she once struck her lost child; and, very far off in point of idea, a fancy to strike our imaginations, for a description whereof let the official catalogue be responsible, "part of a head-rest, on which are sculptured two grotesque figures of Pthah to frighten away the still more grotesque and frightful creations of the fancy during sleep; it is a common device belonging to head-rests, particularly adopted by females. These uncomfortable pillows were used to preserve the very elaborate chignons of the period from becoming disarranged during sleep." From head to foot—there is a Pharaonic boot, "anciently patched"; these are mended sandals. From stocks to stones, three cramps for joining stones together; these are almost exactly of the common Parisian pattern, and might have been modelled amid the masonry of the Louvre. So with the gilded cartonnage; so with the fan-holders, precisely as they are used in the year 1870 by bishops at Rome; and so with the artificial pomegranate that scrubbed the foot of a Shepherd King, and scrubs now the feet of an amateur bather in Cairo. We lose ourselves, of course, when we wander among the lachrymatories, or tear-bottles, so pious and so sad of use; the symbols of Origen, so distinguished and so unhappy; and the compound head-dresses of the deities of the Pharaonic epoch; but we find ourselves again, and feel very much surprised, as Mr. Bunsen would have been, when, believing ourselves to be in the Egypt of the Hyksos, of Pthah and the mummies, and the mystic Ram, we find Grecian wine-jars, Nitrian and Lybian drinking cups, Early Christian lamps, Italian tazzi, Athenian sculpture, Arabian goblets, and Roman vases. They are all attractive; yet why call them Egyptian? In the case Number IV., the character of the collection varies. You have a basket made of papyrus leaves; another containing "offerings to the dead," and "a finely-made basket, unopened, supposed to contain seed-corn, which we know was always buried with the deceased, who was believed to sow with it the Elysian fields in the disembodied life." Let us confess we felt a criminal desire to tear the covering off from this unopened basket. Yet there was an abundance of distracting varieties: a hank of papyrus twine, a toilet box, a casket, with two locks of hair, "prepared to be thrown into the tomb by the females who attended the funeral." In the whole series we observe the incredible, or, at any rate, unintelligible, art of preservation which the old Egyptians possessed. Take a little basket; it contains a cake of colocynth. It is as bitter as it was two thousand years before a single mosque was built in the Egyptian land. And those blue-painted eyebrows of the dead, and the red-wood cheeks of the effigies; and the coloured waxen figures, brilliant as when the artist stained them; and the piece of rose granite from Thebes, with remnants of gilding; and the ointment-box about which the Apostle might have written! We purposely overlook the bronze objects. They are not Egyptian; they are partly Abyssinian, partly Greek, and, generally, not antique; indeed, they should not have been included in this gallery. The image of Horus is manifestly a Roman imposture. That of Khem, "the Vivifier," is a spoilt copy from a Latin caricature. It is difficult to guess whether the figure of Aum is of modern Egyptian, or of modern Roman conception; assuredly it is not Egyptian in the historical sense of the term. We turn from these to the true pastorals of the olden Nile, and discover one that brings to the heart so many associations: "model of the hand-plough of Egypt. This instrument is always borne by the mummy figures, who were supposed with it to cultivate the fields of heaven. A similar plough or hoe was lately in use in Egypt, the light sandy soil of which requires no heavier tool." Hard by this, "a scribe's writing knife; cast bronze; a similar specimen found at Thebes was so perfect as to be still used for a penknife, after the inertion of 3,000 years." Here was technical education, *placet* my Lord Mayor! There is not much to notice in the faces translated from coffins, the mummies of cats, the withered bones and bodies of the ibis, or the multitudinous assortment of canopic vases, many of which, we fear, are apochryphal. Decidedly, no faith can be placed in the pretended hieratic writings of Nos. 20 and 21. Nor can No. 34, however remarkable, be accepted as genuine: it is out of character, time, and type. The Syro-Egyptian figure, rumoured to be from Crete, is also an evident barbarism. We leave these gladly for Table IX., loaded with treasures:—bricks which the first Israelites might have moulded; canopic vases with deep incised inscriptions; boxes of scarabei in lapis-lazuli, limestone, porcelain, and glazed ware; fragments which tell of the Ptolemies; hieroglyphs and bulls, more holy than those of Rome; emblems, symbols, mortuary trophies; corpses inscribed from head to heel with supplications to "the Lord of Plenty;" specimens of "the sacerdotal leopard-skin," "the cross of life," "the winged expanded solar disc;" and, as the Crystal Palace authorities somewhat dogmatically say of a certain coffin, "at the head of this are placed two fragments of another, to show the Egyptian method of joining by wooden trenails inserted diagonally, as in the construction of the Ark." It would be useless to traverse all this mythology; so that we only point out the specimens of industrial genius preserved:—parts of a morticed and panelled sarcophagus; fifteen specimens of various coloured glazes; statues and busts in sycamore wood; porcelain rings and belts; models of human teeth in Nubian ivory; limestone figures, light and fair as our Parian; beads strung together by threads utterly beyond our power to date; hollow blue glass balls; paint brushes; "charms composed of mystic eyes," and so forth; yet among them are forgeries against which all students of Egyptian antiquity should be warned. Thus, the pectoral tablets, representing Anubis as guardian of the tomb; the Maltese amulets; the Murano glass; the two big bottles, which are not ancient Egyptian, but modern Chinese; the cylinders, which are not Egyptian, but Arabic; the human-headed vase, which was a late invention of Italy, and not known to Egypt; and, we suspect, a large proportion of the amulets. We have said, and we do not unsay, that the exhibition is genuine, and that its collector was a man of wide and exhaustive scholarship. Nevertheless, in all this varied assortment, we cannot help remarking upon the obvious flaws in our notions of what ancient Egypt must have been. We think of it in the presence of mummies, cats, the ibis, broken jars, bronze bottles, and countless relics. Yet we may be mistaken after all. We may not be able, even with these witnesses, dug up from tombs, to solve the problem of the German pedant, and "fasten the thread of universal chronology round the apex of the pyramids." Suppose we are less ambitious, and try to ascertain when was woven that "very large specimen of coarse linen cloth, hieroglyphically called the robe of justification, being that in which the deceased stood before Osiris. The garment is 16ft. by 9ft., and has a fringe along one side." Beyond question, it is the most singular example of textile fabric in existence. No ruin in the valley of the Nile can be compared with it as a curiosity. But what of them, as samplers to our time? We can find nowhere their faithful history. They stand as their own records, and we must make out what we can as testimonies to an age and an art. There are some others which, as Makvizi says, "even the wise cannot believe." But as the same author says, "The history of ancient Egypt is full of such marvels and such wonders." If, now, we recommend to our readers a perusal—so to speak—of the Nilotic curiosities at Sydenham, it is not to endeavour to stamp with credence their chronology, or their geology, or their fabulous Theban learning, not to accept their assigned dates, not to acknowledge their parables as strict history. Yet the monuments of their ingenuity and industry are before us. We see their cottager's chair. It resembles exactly that towards which we have warmed with love to observe a Devonshire peasant woman cherishing her child. It is precisely the same chair, or stool, which, from the days of Egypt to now, has been sacred to the nursery. If, then, men have changed, women have not. We may adopt a new form of throne, but we never admit a new form of cradle. And this signifies so much of the vital significance which this fresh Crystal Palace Exhibition carries with it. What do people see? They see the mortal relics of nearly a hundred dynasties; they are called upon to count up the years of epochs almost incalculable; they are asked to read the ruins of ages; in fact, they are summoned to look upon, as if they were mere curiosity-seekers, the ruins, if we may say so, of an eternal past. And they are confounded, at the gate, by a crowd of arbitrary conjectures. We press upon this point, because it ought to prevent the public from deriving absurd ideas from miscellaneous collections. The collection at the Crystal Palace is genuine, as we have said, but the Chevalier Bunsen never spoke more faithfully than when he said "that conscious and confessed ignorance is a better state of mind than the fancy without the reality of knowledge, and that it is not the duty of the historian to screw up the possible and probable into certainty." We do not, indeed, want a chronology for these Old-world relics. They lie before us. They may mark no "standard epoch." What do we care whether Enentifianous or Sethinphilos manufactured that kettle? What, to us, is the tradition of the Sothia circle? We have the temples and pyramids, the mummies and the papyri, and we know, from their testimony, that a great race existed. We have learned the royal names, the meaning of the monuments, and their emblems; and if, as of course is the case, their chronology is different from ours, all their assumed dates guide us on a part, at least, of our way. We adopt an epitome of this whole subject from a learned and acute observer, who remarks, at greater length than we can allow, upon the two great groups belonging to distinct ages, which are, in a certain measure connected, but not linked together, by certain groups that can be proved to stand between them. The first is that of the pyramids of Ghizeh, and of the tombs surrounding their bases. These are, unquestionably, the oldest works of the human hand and the human genius in Egypt; they are so massive, so quiet, so primeval, so archaic and remote from all our fancies; they suggest huge naked giants, vast and yet simple. They are all peace, moreover; myriads of peasants, and not a soldier. But, with the next era appears a quite different state of things, more civilisation and less simplicity, but the reputed reign of peace endured for little more than half a hundred years. Notwithstanding, we may profitably examine these material chronicles and authorities, and teach ourselves a little history from them. We may not, and must not, depend upon the entire accuracy of the facts as stated. These witnesses are telling us a long and dubious story out of the dark. They bring up, out of the deep, no more than specimens from the past. Thus we can neither accuse them of wilful falsehood nor commit ourselves to irrational incredulity. Still, we have found, and we can see, the signs of an antique civilisation, very wonderful and beautiful; no human want unknown, no human want neglected; the proofs are present in our sight; in fact, these witnesses from the tombs and caverns assure us that men, as mechanics, feeling their own necessities, were always, in a great degree and practically, the same as they are now.

ARCHITECTURAL ART CLASSES.

ALFRED BARTHOLOMEW, known to us chiefly as the author of an excellent work upon specifications, was one of the first English architects who pointed out clearly and intelligibly the defects of the present system of architectural education, and who suggested a comprehensive, though impracticable scheme, for dealing with this difficult question. He advanced three reasons for the defects in modern English architecture. "Insufficient practical, theoretical, and scientific education of the architect, want of sufficient practical, scientific knowledge on the part of the builder, and general unacquaintance with the *principles* of taste and scientific structure on the part of the public." The means by which these defects were to be remedied was the establishment of a great national college, which should be the one educational centre for the entire profession, granting diplomas to architects, builders, and workmen, settling the prices of labour and materials, and undertaking, through its members, the whole of the architectural work of the country! The wonderful way in which this scheme is evolved in the 114th chapter of his "Essay on the decline of excellence in the structure and in the science of modern English buildings," &c., must have made many a practical man smile. But amidst much that is ridiculous and chimerical we find the germs of ideas, which, as far as we can judge from present appearances, will ere long have, to a certain extent, their fulfilment, and effect an important change in the position of the architectural profession. The establishment of the Voluntary Examinations is a first and rather lame attempt to define in some way the amount of education which the architect should possess, and a time will doubtless come when the certificate of the examiners will be regarded as a diploma, and be required from every member of the profession.

Mr. Bartholomew, in his enthusiasm, dreamt of making even the plasterers and bricklayers pass an examination, and take a degree, before they could practise as skilled artificers, and claim wages for their labour, and between the humble *a* (or title of the skilled artizan), and the proud distinction of M.M.M., or "mathematical master-mason," the highest honour in the profession, he provided a long series of intermediate honours or stages of perfection. The machinery by which this vast college was to be worked, the employment it was to afford to both houses of Parliament, the bench of bishops, the judges, and the presidents of the learned societies, and the laws by which it was to be regulated, are described with an amount of ingenuity which amuses rather than impresses the reader. And when, in conclusion, we come upon the following dirge:—"Without the formation of such a society the peculiar situation of the practice of architecture in England at the present day but too sadly augurs its total overthrow,"—we feel that if this college is indeed our only salvation, our architectural future is hopeless.

But this was written thirty years ago, and earnest, thinking men can at length see the sign of better times coming, and after the many efforts made in this direction, the commencement of the Architectural Art Classes, and the action of the Institute in the matter of examinations, may really be regarded as the indications of a desire to make the profession of architecture something more than a mere name or the possession of a brass plate.

Our readers will doubtless be aware that at the latter end of last year a joint committee from the Institute, the Association, and the Architectural Museum, was nominated to confer upon the best mode of providing for the artistic training of architectural students. After many difficulties a room was obtained in the Museum at Westminster, and classes for drawing from the antique and from life were set on foot. The activity of the Association has doubtless, in the main, given the impetus to this work, but several of the older members of the profession have come forward both liberally and energetically to aid the scheme with their subscriptions and their advice. Classes for drawing have long been held in connection with the Architectural Association, and many facilities have been afforded by this society to their members, but the much-needed recognition on the part of the Institute, and through that body of the profession generally, has only now been obtained. Mr. G. Gilbert Scott, it is true, pointed out some years ago the necessity of what was then called a school of art accessorial to architecture, but beyond showing how valuable such a school would be, and urging its formation, nothing was done in the matter.

These new classes at Bowling-street, Westminster, have already completed a half session of two months with marked success, and all that is wanted for the future is that architects should impress upon their pupils the advantage of, if not the necessity for, acquiring the power of freehand drawing. The mere fact, however, of advising or desiring their pupils to learn drawing will not be sufficient; they must also give them the time to attend these classes, say two mornings a week, and see that they avail themselves of the advantages thus offered them. Many architects, no doubt, are very willing that those under their care should become good and clever draughtsmen, but there is always a sort of difficulty and grievance made about giving up office time to attend classes and lectures. Now this is extremely unfair and unjust, for it can hardly be expected that men who are kept closely at office work from week's end to week's end will find time of an evening to acquire special art training which may eventually be of use to them, but which, perhaps, during their articles they are apt to undervalue. Although the instruction at the Architectural Museum is intended to be, as far as possible, self-supporting, there are, at the first offset, many expenses which young men can hardly be expected to meet—such as the fitting up of the rooms, the models and examples for instruction, and the charges for completing the access to the galleries, for to the shame of the profession, the Museum is still far from being a finished building. We mention this in order to point out to those architects who avait themselves of this instruction for their pupils, that subscriptions are much needed to establish these classes upon a firm and secure basis.

To have the means of providing one's pupils with good sound teaching in drawing from the round and from life is a boon which it would be a pity to lose for the sake of a small subscription, and if the leading members of the profession would come forward liberally, the complete success of the art classes would be established. There is a strong argument, moreover, in favour of these classes, which up to the present time has hardly been hinted at, namely, that the entire system of articles has lately been more or less attacked. It appears to us that the objections which have been brought forward would to a very great extent be silenced if architects would provide for their pupils not only instruction in the proverbial tracing and drudgery of an office, but also a certain amount of art education, and the theory and practice of construction and design, such as is afforded by the classes at the Architectural Association. It may be as well, in conclusion, to allude briefly to the arrangements which have been made for the various classes. It was proposed, in the first instance, that these classes should be six in number, but up to the present time two only have been established—namely, drawing from casts and from the life. In the next session, which commences in November, and ends in February, 1871, two new classes will be commenced for modelling and for geometry, and in the summer session, lasting from March till June, it is proposed to start classes for water-colour drawing and for decoration. The instructors at present are Mr. Wallis (the curator of the Museum), and for the life Mr. Weeks. About twenty students availed themselves of the school during the short session which ended in June last, and it is hoped that with the extra amount of publicity, and the capital drawing here offered for a very moderate fee (30s. per session), a much larger number will join in the ensuing session.

◆

THE WALL-PAINTINGS DISCOVERED IN THE SUBTERRANEAN BASILICA OF S. CLEMENT IN ROME.

We noticed some time since a few of the interesting copies of the above-named wall-paintings, which were expressly taken for the South Kensington Museum, and are now exhibited in the ante-room to the Meyrick collection of armour. We consider them so valuable to the student of architectural decoration that we propose to recur to the remaining examples of the collection to which we did not allude on the last occasion. No. 7 is the Finding of a Widow's Son in the Chapel of S. Clement; date about 900 A.D. The legend bears that this chapel was constructed by angels on the spot where the body of the saint, who suffered martyrdom by drowning, rested. Every year this chapel, being miraculously rendered accessible, was visited by the clergy of Cherson and their flock. On one occasion a child being left in the chapel was supposed to have been drowned, but was found the next year by his mother alive and unhurt. This painting was executed by order of Beno de Rapiza, whose figure, as well as those of his wife and children, are seen near the large portrait of S. Clement. This incident is depicted with considerable *naivete* and natural dramatic effect in the upper compartment of the painting, which is a large panel with very dark background, enclosed by a fanciful ornamental border of foliage and tendrils, forming the division from the subdued vermilion colour which surrounds the whole of the several compartments of this and the rest of these paintings. The mother has joyfully rushed forward to seize her long-lost child, who evidently recognises her by his attitude and the pleased expression of his face. Another figure of the same woman clasping her infant is also represented in the same picture close by, as their dresses are identical, and thus two periods of time in the narrative are given in the manner not unusual in this early and simple character of art. The bishop and group of attendants are issuing from the gate of a town and approaching the shrine—a sort of baldachino over an altar—where the event is taking place; round two sides of the shrine, in defiance of perspective, is a conventional representation of water, the fishes in which alone explain its nature.

Beneath the picture is an effective and well designed border, with white doves on red panels, alternating with gold rosettes on dark ground. This border is interrupted by the top of a large circular panel enclosing a full-sized bust of the saint, below which, on a white panel, are figures of the donor and his family, with sundry inscriptions. The general effect of the whole is powerful and rich in colour.

The painting marked as No. 8 in the list, like the one just described, was a votive offering from Beno de Rapiza. It represents S. Clement saying mass, with the punishment of Sisinius. Sisinius, the heathen husband of a Christian lady named Theodora, having intruded himself upon the celebration of the Christian rites, was stricken with temporary blindness, on recovery from which he became converted. The mutilated painting at the top of the composition represented S. Clement installed as pope by his predecessor, S. Peter. Below is a rudely-executed design of Sisinius superintending the removal of a column by slaves, with inscriptions both in good Latin and also in the corrupted tongue which was then gaining ground among the lower orders. Here again the general composition, the forcible tone and character of the colouring, and the ornamental border above the lowest painting, are well worth studying, to say nothing of the details of costume, the architecture, and other accessories. The uppermost picture has the whole of the upper part of the figures destroyed. Although the execution is so rude, the tale is well told. Sisinius struck with blindness is well and naturally given, without exaggeration, and the figure of his wife by his side is not devoid of grace.

No. 9. The next, and the most important painting in the series, represents events from the history of S. Alexius. In this composition a triple action may be recognised. Beginning on the left hand, the first group shows S. Alexius as a mendicant asking an asylum from his patrician father Eufinicanus, by whom he was kindly received, although his relationship was unsuspected. In the next scene Pope Bonifacius is receiving from the hands of the dying saint his own written record of his life. The last group on the right hand shows the lamentations of the parents over their dead son, whose identity is proclaimed by the Pope. Latin inscriptions below refer to these several actions. Above is a mutilated composition, the upper part of which has perished as in the last example. It represented our Lord enthroned between the archangels Michael and Gabriel, and SS. Clement and Nykolaus. The date of this work is also in all probability about 900 A.D. Below the painting is a border of capital design, and a very interesting and rich dado decoration of scrollwork and birds in the enclosed panels.

The destruction of the upper picture is much to be regretted, as by the fragment left it would seem to have been simply arranged and effective. The more important and dramatic composition below is too crowded, and not so well arranged as some of the others we have described.

No. 10 is a painting of Our Saviour surrounded by saints. This, the last of the series executed for the South Kensington Museum, represents Our Lord standing on a plinth in the centre of the panel, accompanied by the archangels Mihael (so written) and Gabriel, together with S. Andrew on the spectator's left, and S. Clement on the left. The general composition is similar to that of the damaged painting mentioned in the last description. It is an interesting fact to notice that the fingers of Our Saviour, who is represented in the act of benediction, are placed in the manner used in the Greek rite. The drawing is very rude, and the figures short and clumsy, but the colouring is vigorous. A sort of twisted circular column flanks the picture on each side, and a damaged inscription appears below.

Notwithstanding the evident imperfections in the execution of the paintings from which these copies have been made, they are not more glaring than those of the frescoes that have been brought to light on the walls of many of our own mediæval churches; and, decoratively, they are far more effective, and the colouring more powerful. We could much wish that our modern building bore down to our posterity equally interesting records of our passing historical facts, as these have done to us of the legendary lore of our ancestors.

◆

THEORY OF THE ARTS.

(*Continued.*)

Education—Subordination of Study.

I HAVE endeavoured to show that the discordance existing between the Industrial and the Fine Arts—between the moral, social, and æsthetic ideas and the commercial activities of our present state of society, arises mainly from the want of a proper subordination of the physical, intellectual, and moral faculties—the need of the restoration of that balance or bond of unity which was sustained under earlier and more homogeneous states of civilisation. In other words, science and material industry have just reached that point or stage of progress by virtue of their greater susceptibility to development and the increased impulse given them, at which point they considerably outbalance another and third force, without which they are merely partially useful, and cannot help onward the great work of human science towards that condition or grand Comtean co-ordination of ideas which must ultimately take the place of the present confused, conflicting, and heterogeneous state of thought. Hence we see the apparent discrepancies between engineering science and æsthetics, between the requirements of our streets and railways and sanitary improvements, and the requirements of correct taste and fine art. As ever since the days of Galileo science and religion have been growing in antagonism—I mean a seeming one—so ever since the same epoch our great public utilitarian works and triumphs have been sadly running counter to our ideas of the beautiful or the morally impressive. Our railways, wherever they have intersected a lovely landscape or traversed a suburb, have marred rather than improved it from an artist's point of view, and this, moreover, by the very essence of its utility. At the present day utilitarian art and taste are irreconcileable, or appear to be so. The union of the two seems to be impossible, impracticable. If it is effected it is often at the expense or sacrifice of the fundamental condition. While the fine arts typified the unity of ancient civilisations they now characterise the diversity and discordance of modern society.

What lies at the root of this sad discrepancy and want of harmony seems to me to be want of proper order or subordination in the use of our faculties and knowledge. I have hinted this in my last paper, and will now more practically explain the due proportion which should be subserved in art education. Comté, and other writers on philosophy, have established, I think, beyond a doubt, that the present intellectual confusion depends on the coexistence and employment of three incompatible systems of philosophy, instead of the employment of that one which from the very nature of things must prevail—the one, in short, according to which the mind has evolved itself, and the progress of civilisation has subserved. According to this method or process I have tried to show the arts have proceeded from remote ages to modern times. Why they have lately so retrograded is simply because that method has been unheeded and checked by extraneous sources, and the re-employment of ancient modes of thought and study. In the study of art, architecture especially, this rational method has actually been reversed, that is, the empirical has followed instead of preceding the rational. We find this to be the case also in our schools and universities; the old systems of philosophy and instruction in Greek and Latin authors take the lead, the scientific basis of education being entirely neglected; the abstract being often taught before the concrete, instead of an accruing experience being necessary before abstract science can be understood. Thus in some schools the rules of grammar, and arithmetic, and geometry, are taught before sufficient knowledge of experimental kind—of language, of number, and form—has been acquired, and before the mind can possibly grasp abstractions or complex ideas. Thus, also, it is absurd to teach students drawing by placing abstract definitions of points, and lines, and angles before them, a sort of analysis, in fact, before empirical experiences have been gained. Such an inversion of the method of study must produce slavish minds and unprogressive thought, simply because the ultimatum, or principles, or conceptions, are arbitrarily fixed before experience has been obtained. As Herbert Spencer well says, such a method of instruction is about as reasonable as prefacing the art of walking or speaking a tongue by a study of the anatomy of the legs, or the technicalities of parts of speech and syntax. And yet in the latter study many schools adhere to the plan of thus inverting the proper and natural order of teaching. Though set rules in architectural composition are now nearly exploded, we are doing much the same sort of folly in slavishly reproducing old arrangements, types, and features, instead of applying a method of study to the fundamentals of all art. We thus find conflicting ideas perpetrated in arrangements of buildings, their decoration, formative and polychromatic, while improved appliances and manufactures of the building art are often at sad variance with our notions of propriety of taste. Manufacturers work in total neglect and disregard of architectural requirements and taste, as witness the ordinary run of patterns for chimney-pieces, stoves, furniture, paper-hangings, fittings, and decorations in wood, iron, glass, and plastic substances. I just mention them here; by and bye I hope to discuss in this journal the proper subordination of all cognate arts, and the limits of each, without which order, architecture, as an art, will be ever in antagonism to the building trades and arts, and the triple "priesthood" or combination of architecture, sculpture, and painting, never in complete harmony or power.

Science and the mechanical arts, then, will always be in direct antagonism to fine art, unless the latter adopt a more scientific method, and not be content to base its efforts entirely on the works of our ancestors. In this utilitarian age there is a great danger of science (organized knowledge) subserving only its practical ends; its cultivation having become so much associated with ideas of profit and utility. Hence in this practical capacity science is too apt to take the extreme and become still more alienated from the fine arts, as indeed it already assumes in regard to religious truth and biblical criticism. Again, the effect of modern fine-art study is quite in the opposite direction. This opposite tendency of science and fine-art must be prejudicial to the latter as the least fundamental and profitable effort of the two. The object of artists should consequently be to give art a scientific basis, a truthful expression, and thus help to reconcile the two studies. Having got to the extreme point of estrangement, I believe future progress will bring them more in unison by the elimination of errors and the co-ordination of common principles. I think we are even now far in advance of the last century in this respect. There was a feeling of repugnance to science among artists, moralists and divines, not yet entirely removed, arising from the emotional part of our nature, against the severity of science as the offspring of the intellect. The moral life must always be larger and more intense than the intellectual life, as Comté even acknowledges in his grand work on "Positivism," and hence science was left for a long period to scientific men. Here too, then, the gulf between the two studies has been widened, and artists have neglected a method, but no such repugnance exists now.

I think it will be admitted, then, that a due subordination in our faculties or education is at the foundation of a proper feeling for and conception of art. Let us see how this is to be achieved as regards art generally, the enjoyments of which imply a pre-existing society. To be duly appreciative of any art it is necessary primarily that our physical wants should be supplied. No one can admire a painting, or a piece of sculpture, or listen to a musical composition with pleasure unless he be—1. Safe, devoid of physical danger and suffering, and possess the faculties of seeing and hearing. 2. He should possess that frame of body necessary to fit him for the exercise of his mental faculties; thus, he should be in a certain temperature, not be subject to draughts, unpleasant sights, sounds, and smells—in short, an atmosphere conducive to comfort should pervade the place or object. Another condition, secondary in importance, is that he should be free from mental anxiety or trouble of any sort, his mind should be tranquil, and, we might add, his conscience too.

Beyond these fundamental essentials, which are, I think, put in natural order, come the higher mental and moral predisposition requisite for conceiving, admiring, and critically examining a work of fine art. Thus it will be seen a test of actual value must be applied to determine the order of any particular study or art, or, in the case of a complex art like architecture, to show the proper place or value of any particular idea or element in the organical structure. G. H. G.

(*To be continued.*)

LONDON ARCHITECTS AND LONDON BUILDERS.

(*Concluded from page* 255.)

TOWN and country architects and builders should now watch with interest the issue of what may be termed the conditions of contract movement just being inaugurated by the London Builders' Society and the Royal Institute of British Architects; or, more strictly speaking, the Council of the Institute. A contemporary journal, specially devoted to the builder's interests, is somewhat angry because we ventured in our last article to regard the formal approval of these conditions of contract in the light of a "hole and corner" proceeding. If, however, as we are now informed, a strong effort is actually being made to bring these conditions or clauses into public use, we do not see how, writing as we are doing in the interest of architects and clients (as well as of builders), we can at all qualify the phrase we have used. Our contemporary is, we doubt not, quite correct in saying these clauses are not new to either the London or the General Builders' Society. Our contention is that out of the Institute neither the London nor the provincial *architects* have had any fair, adequate opportunity of considering them. We believe the builders themselves have acted in perfect good faith. It is their misfortune that, for sheer lack of any large club of English architects, they should have been driven perforce to treat with so very unrepresentative a body of gentlemen as the Institute of British Architects. In this disadvantage lies the weakness of the entire movement. It is too bad that there should be, according to the "London Directory" for the present year, some eight or nine hundred practising architects, the vast majority of whom have no connection with this London Institute, whilst in the provincial towns it is even more unmistakeably ignored; and that yet, while this is the case, all English architects from John o' Groat's to Land's End should be called upon to accede to a form of contract conditions which they have had no hand whatever in drawing up, and which, as yet, has only been agreed to by the Council of the Institute. We now hear that the builders both of the London and of the General Society mean to absolutely decline all future contracts whose conditions may be at variance with the arbitration and quantities clauses quoted in our former article—that, in fact, the London and the General Builders *have actually struck work!* Here truly is a pretty architectural revolution, got up, as it seems to us, on the very shortest notice; and with, as it appears, not even the Institute, but only its Council, to stand sponsor for it on behalf of an ill-used body of gentlemen whom we will designate as "The London and General Architects." The London and General Architects are, for aught we know, quite as estimable and as competent as the Royal Institute of British Architects. They are certainly far more numerous, and represent a far larger body of clients who dabble in bricks and mortar. What, let us ask, are they going to do with the recalcitrant London and General Builders who have just succeeded in converting the Institute—any way its Council—to the adoption of these printed conditions of contract? If the London and General Builders are at all a large body of gentlemen, we would advise the speedy formation of a club or society of London and General Architects to consider these conditions, and either to handsomely accede to them or to combine against their acceptance. Such a society need not meet oftener than once a quarter. It might eschew all fine art, with all the sciences, and, above all things, coffee, *conversazioni*, and honorary members. If the architects of the London and General stamp don't adopt some such step as this, they will, it seems, stand a fair chance of being, on the "divide et impera" principle, gobbled up in detail by their good friends the London and General Builders; for what says our own good friend and coadjutor, the *Builders' Trade Circular* of October 13:—

> "From all this there is every necessity for the builders of the country to at once stir in the matter, and insist that these conditions be embodied in their contracts. We are told that on the occasion of sending in tenders for the new Home and Colonial Offices at Whitehall, last month, the tenders were sent in on the understanding that these very conditions were to be the conditions of the contract; and if the Government authorities have acquiesced in this, there is no reason why the practice should not be general."

From the above quotation every architect in the country, as well as every architect in town, may see plainly that his customary office *regime* or system of practice is about to be ruthlessly set aside; and why? Simply because the builders have so determined, after discussing these conditions with certain architectural societies, and agreeing upon them with the Council of the Institute of British Architects!

Now we might find a good deal to say for and against these conditions of contract; but at present we forbear, and it is an error to suppose we write with any undue regard for "dictatorial power" over contractors. What we do say is that, however satisfactory to the builders may be these "agreed" conditions of contract, the great body of English architects, scattered over the metropolis and the provinces, have had no opportunity whatever of considering these conditions; or of saying "yes" or "no" to them. The only architects who have had to do with them at all are the members of certain dilettanti societies, and the council of another dilettanti society—the Institute of British Architects. There is not one of these *architectural* societies, including the Institute itself, that can fairly be put on a par as a professional or trades union with the London Builders' Society and the General Builders' Association, both of which, we doubt not, are *bona fide* clubs or confederations for the regulation of the building trade, and in no degree societies for mutual improvement and the like.

Do we blame the builders for this? Not at all. It is an unfortunate thing for them, and, as we have said for years in these very pages, a most disastrous thing for English architects, that there exists no known club, confederacy, or association of architects, that can deal with such questions, or set up any pretension at all to speak with authority for or to the architects of the country. There are plenty of *architectural* societies up and down the country; but no clubs or societies of *architects* in any town that can speak for or claim to represent the architects who practice in it. So it is with the Institute. It is a learned body of home and foreign architects and amateurs, with power, indeed, to examine district surveyors for the metropolis; but, even supposing it to endorse the action of its council as to these conditions, the entire Institute has not even power to impose them on the eight or nine hundred architects in London, to say nothing of the numerous architects in the country, where its rules are ignored, and its very name is hardly known. The builders, for lack of any other corporate body of English architects to address, have, as we are quite aware, been for some time in communication with the Architectural Association, the Architectural Alliance, the few provincial architectural societies, and, last but not least, the council—only the council—of the Royal Institute of British Architects. Well, suppose they have, *cui bono?* What have English architects, practising all over the country, to do with that? The great bulk of them have nothing whatever to do with it. We may then surely say (as far as English architects are concerned) this is a very hole and corner affair. We say it, too, with very great regret, and with real sympathy with the two societies of builders that have taken all this trouble to effect a well-intentioned reform in the existing objectionable system of tendering for, and entering into, building contracts. Whether or no the architects all over the country—and their name is legion—who are unaffiliated to the architectural societies will tacitly accept these "agreed" conditions of contract, or whether they will now incorporate themselves to consider them, we will not venture to say—Time will show.

Meanwhile the public will require to go on building. The public—the building public—is very obtuse and undiscriminating in these matters. It may be very desirable that in building it should always take care to call in as its architect a Fellow of the Institute, or a member of the Architectural Alliance; nay, according to these very conditions, the former is, or is to be, an indispensable article (of war); but, practically, the public disregards, and will continue to disregard, the whole machinery. The public employs whom it likes as its architect; and, as any one may see by a glance at our lists of tenders delivered from week to week, its architects are not always members of those architectural societies with which these builders have been in communication.

Without yielding to the temptation to discuss these conditions, we will say of them that they contain much that is good; and that, as every one will admit, the present system of tendering and contracting is anything but satisfactory or creditable. Our quarrel is not with the builders, nor with the unchartered architectural societies, but with the general body of architects, and notably with the Institute, which might years ago have made itself a power in the land instead of remaining what it unhappily is—a comparative cypher in the sum total of English architects, powerless to speak on their behalf.

One feature there is in the movement that, if these conditions are pushed into public prominence, as our contemporary hints is intended, will provoke a storm of indignation all over the country. We allude to the standing appointment of Fellows of the Institute as arbitrators *par excellence*. We take it—at least we charitably hope—this is but a slip of the pen on the part of its council. We feel sure there are in the Institute of Architects very many Fellows who will shrink from giving their sanction to a provision which unduly invests them with an implied superiority over their very many professional brethren out of the Institute; and which most indecently, as we think, assumes that none but Fellows of that respectable architectural society are competent or reputable architects. If we are mistaken in our anticipation it will be a pity. It is bad enough to have King Log installed in Conduit-street, where, and in Grosvenor-street, he has reigned with such quiet inert respectability for nearly forty years; to come out now suddenly in the character of King Stork will be simply indecent and offensive. W. Y.

GOSSIP FROM GLASGOW.

ABOUT a quarter of a century ago, there was in Glasgow what might be called a *money*-mania of *Bank*-building. At that time there were built offices for the Clydesdale, the Western, the British-Linen, and the Union Companies, from designs by David Hamilton; and for the City of Glasgow from the designs of Black and Salmon. With the exception of the last mentioned, these have all undergone more or less of change. The Western Company, shortly after having had its office enlarged, and to a considerable extent remodelled by Bryce, of Edinburgh, got into liquidation. The premises were purchased by the Clydesdale Company, whose own office was then bought by the Inland Revenue Department of the Government. The telling-room of the British-Linen Company's office has been remodelled by Messrs. Black and Salmon; and that of the Union has been wholly reconstructed from designs by the latter architect. A few years after the four banking offices by Mr. Hamilton had been built—if I recollect aright he died before the Union's was completed—architects were invited to compete in designing a new office for the National. The design chosen was that of Messrs. Gibson and MacDougal, of London. Then followed the Commercial's new offices by Rhind, of Edinburgh. After this, until within a year or two, architects' drawing in connection with banks has been strictly limited to the occasional drawing of a cheque. But now bank-building is almost as active as it was five-and-twenty years ago, and "branches" are growing up as if this was the Golden Age, and Scottish mists were the *pluvio auro* of Ovid's "Metamorphoses."* Doubtless the majority of the branches are ordinary shops, dignified with a cornice and pair of consoles over the door, but several of them have been built to order, and have very handsome elevations. Among these are the branch offices of the Clydesdale and the City of Glasgow in Trongate, by Mr. Rochead; of the Bank of Scotland, in Bridge-street; the Clydesdale, in West George-street; and the Union, in St. Vincent-street, by Mr. Burnet; and the branch-office of the National, in Union-street, by Messrs. A. and G. Thomson. The new buildings for the National Security Savings Bank, by Mr. Burnet, have been occupied but a year or two; the local chief office of the Bank of Scotland, by Mr. Rochead, is little more than completed; and the Clydesdale, infected with epidemic accidentalism, will build new premises in Saint Vincent-place—a few doors west of the Bank of Scotland—whenever it can obtain possession of the site. While I am writing about banks I may mention that the British Linen has been covering its carving with paint, and the Commercial enclosing its sculpture with wire.

The run upon the banks is seemingly about to be succeeded by a march among the insurance offices. The City of Glasgow and the Scottish Amicable have each obtained designs for new offices by means of limited competition, the successful competitors for the former being Messrs. Peddie and Kinnear, of Edinburgh, and for the latter Messrs. Douglas and Stevenson, of Glasgow. I suppose it must be in consequence of our recent surfeit of masks and vases that the City of Glasgow Company imposed upon competitors the somewhat singular condition, that in the elevation there was to be neither "storied urn nor animated bust." Byron speaks of Monk Lewis making Parnassus a churchyard, and our architects seem to be in a fair way of making streets of tombs as in Pompeii. They cannot design in Italian without studying *Vas*-ari. On the offices newly-completed for the Scottish Widows' Fund, a funeral urn is an appropriate ornament, but it could be apposite on a "Life" office upon only Falstaff's reasoning, that "to counterfeit dying when a man thereby liveth is to be no counterfeit, but the true and perfect image of life indeed." And heads are as common as if every window was a pillar-y. A bank may find a good feature in a face, but an insurance office may be none the worse for its designs being unmasked; but we look for change even in banks. We are becoming tired of seeing on building after building keystones with heads and pedestals with urns, and getting somewhat ashamed of the poverty of invention; and even when invention is bold enough to turn the tables, by crowning the pedestals with truncated obelisks, we are impressed more by the boldness than by the beauty; the Italian style is having its day, and we will see with what attainment.

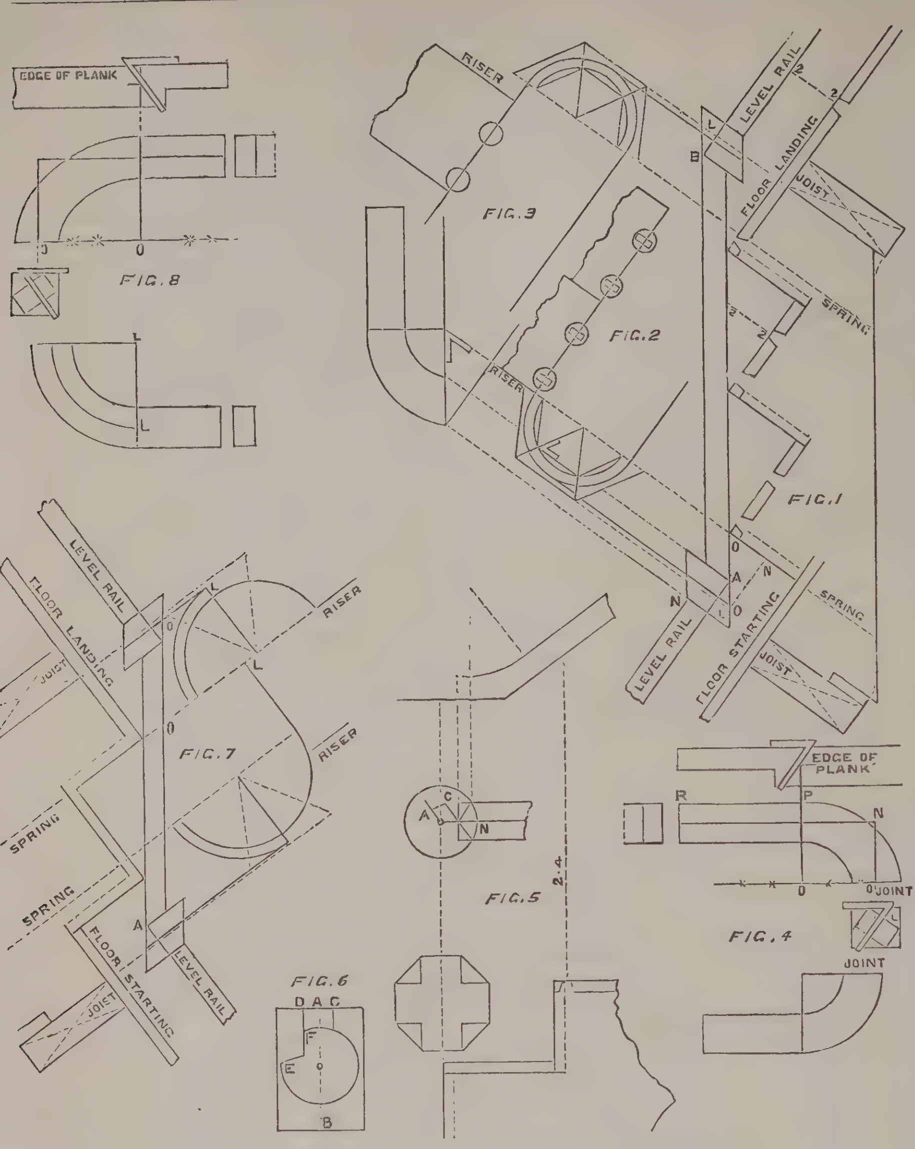
An hospital, in connection with the university, and about to be built in the neighbourhood of Glasgow, is in a very different style of architecture, the Old Scottish. It is from designs by Mr. Burnet, an architect who has of late been largely practising this style in some of the most magnificent mansions that have for many years been built by Glasgow's "merchant princes." I subjoin a description, taken from a local newspaper, *The Star*:—"With a frontage of 500ft., the hospital will extend about 240ft. backwards. It will be three stories in height, with basement, floor, and attics. The basement floor will comprise kitchens, cellars, &c. The ground floor will be occupied by the administrative department, including a clinical lecture-hall, about 40ft. by 45ft. In the two upper floors there will be eight wards, each 72ft. by 29ft., and containing each eighteen beds. There will, however, be other eight apartments, containing from three to five beds each, giving a total accommodation of 370 beds. In the attics the nurses and domestic servants will have their sleeping apartments. The wards will be lighted on every side, and the clinical lecture-hall will be situated directly in the centre of the building. The contracts are all given in, and are this week (12th October) being considered by a committee of the *Senatus Academicus*. The hospital will occupy between ten and eleven acres of ground, and the situation—immediately west of the university—for medicinal and sanitary purposes, is, without doubt, one of the best that could be found within easy access of the city. It is worthy of remark that the erection of the new University Hospital is the first step in the direction of carrying out an idea, which, we believe, has found favour with the Faculty of Physicians and Surgeons of Glasgow—namely, that there should be an hospital or infirmary at each end of the city." Our present hospital, "the Royal Infirmary" (supported solely by voluntary contributions) is close by the cathedral or High Church, and about five minutes' walk from the old college buildings, now being taken down. Between the old and new hospitals there will be a distance of about two and a half miles. There are hospitals for special diseases, fevers, &c., in several parts of the city.

I see that the capitals on the small building in Gordon-street are being altered. I will not suppose that my criticism has had much influence with the architect. I suspect that the motive power has been either his own better judgment or his employer's instructions. After this alteration this frontage, although narrow, will not be the least ornament in a street in which are some of the best buildings in the city.

Several of our public monuments have been undergoing repair or cleansing. Whether intended or not, Wellington's face was brightened up as Prussia invaded France; and—for "Peace hath her victories not less renowned than War"—since then, Knox—the man who perhaps of all others has made Scotland what it is—has had his statue with its columnar pedestal and copiously-inscribed stylobate put into thorough repair. The statue, with its elaborate pedestal, of MacGavin, a Glasgow merchant, and author of "The Protestant," has been similarly restored. Wellington, a bronze equestrian statue by Marochetti, stands in front of the Royal Exchange; Knox, a colossal, and MacGavin, an heroic, and both of freestone, are in commanding positions in our celebrated Necropolis. Too frequently after public monuments have been erected they are forgotten and

---

* Book IV, Fable 14.—*Serpentes e sanguine Medusæ procreati.*



NEW ELEMENTS OF HAND-RAILING.—PLATE VI.

uncared for, or it may be, that there is no fund from which to keep them in repair. Happily for the Knox statue a large sum had been left over after every thing had been paid for, and a portion of this was now available for its restoration.

◆

NEW ELEMENTS OF HAND-RAILING.*

(*Continued from page* 276.)

Plate 6.—To lay out Straight Stairs, having a Cylinder at the Landing of Level Floor. —Construction of Wreath for the Same.

THIS is the first of the practical lessons on stair-building; it being a plain flight, with cylinder and wreath at landing.

Fig. 1 shows three steps and three risers. Draw floor-landing and starting. Let the under side of rake-rail rest on the corners of steps. Now draw under side of level rail, raising it above the floor to suit long baluster 2 2, on square step. The under side of rake-rail on corners of steps intersects at A with that of level rail, giving a point to set off the width of rail, say 3½in., to L. Let the thickness of plank be 3½in., and mark section A L N, which is equal to width of rail and thickness of plank, giving N as a point to draw parallel with the floor. This also determines thickness of rail on rake and level. For example: Let the thickness on rake and level above be equal to N L below. Draw the lines which give the intersection B. Let B L equal A L below. Next, form section of the plank, showing its plumb-cut landing, same as starting. The position of rail being fixed, B denotes the surface of the plank for the wreath landing, L being cut off square with the joint. Gauge from upper surface for thickness of rail. Thus the wreath landing, by being reversed, answers for the starting.

We are now ready for the cylinder. Its diameter may be unlimited. Supposing its diameter or spring to stand on a line with riser O (the centre of rail and cylinder shown above). The centre of baluster being the perpendicular, cutting section at O, gives O N as radius. Let L and diameter of cylinder landing equal O N. Draw dotted line marked "Spring." Look at the situation of both diameters. That at starting stands on a line with riser O, while that at landing stands back from face of riser. This shows the necessity and importance of correct drawing, it being utterly impossible to construct stairs or any work requiring mechanical skill without a plan.

The learner should remember this fact, and studiously avoid *guesswork;* always seeing the intention of every line clearly and distinctly before a cut is made.

Figs. 2 and 3 show the staves for the cylinders, the joints being glued, and screwed from the back.

Fig. 4 exhibits the construction of the mould.

Here let it be understood that the centre or half the width of every hand-rail stands on the centre line of balusters. Therefore, work from centres for the construction of wreaths. For example: Let O O and O N equal O O and O N, Fig. 1. Draw from N parallel with O O. Set off on each side of O N the distance A O, Fig. 1. Set off half the width of rail on each side of line from N, and draw the straight shank. Find the points for the pins, and strike the mould with a string. Dress to the lines.

Now lay the mould on the plank, mark and cut square through. Face one side. Work the edge square with the surface. Make joint O square with O N and the surface. Be particular to keep stock of square against the joint and the edge of its blade on the surface. This is the correct way to prove joints.

Use a 9in. or 12in. square.

Now draw the line O P on edge of stuff. Mark half its thickness. Next apply the pitch-board or a bevel, and draw pitch line as shown. Lay mould on, keeping its edge P R fair with that of the plank, and have P opposite the bevel line. Mark the surface along the edges of the mould. Apply to the under surface in same manner; and you are ready to cut off the slabs and give the wreath its cylinder form.

The pitch line on the edge is a direction to hold the plane or saw.

It would be well to use a round for the concave side. Work close to the lines on the surface, except at the joint. Leave that a little full. Next cut off L square with joint. Now notice the corner on the concave side: it gives a perfect direction to form the easing from rake to level, This being done, gauge to a thickness. Then the quarter circle that forms the level part of wreath should be, say ⅜in. or ½in., thicker than that of the rail. This will give the opportunity for continuing the curve across the joint; besides adding much to the appearance of the wreath. It, however, raises the level rail above that which is shown at Fig. 1. The remedy is simply to drop the level rail on the drawing to whatever additional thickness is given to the quarter circle.

Fig. 5 shows the ramp, cap, and base of newel. To draw the mitre, set off from N half the width of rail. The solid and dotted lines then show its points.

Fig. 6 is a method of cutting the mitre cap to fit at once. For example, take a piece of plank. Run a gauge line on, say A B. Now, observe the mitre above. Extend one side towards C. Draw from O parallel with it. This gives A C, which transfer to each side of A, Fig. 6, giving C D for two cuts made with a panel saw. Have the kerfs toward A. Now screw the cap through its centre on the line A B. Next, set the compasses to the width of rail. Make two pricks on the edge of cap at E and F. Enter the saw at D and make a cut through F. Revolve the cap until E stands opposite C. Then cut through E, and the mitre is complete.

Fig. 7 shows how to contract the plan into the least possible space on the drawing board.

It gives the cuts for the carriage, starting and landing, also the position of the cylinders, and a plain direction for the construction of the moulds. It will be perceived that the cylinders here are much larger than those on the right, and are reversed; yet the height of level rails above the floors and cuts of carriage is the same as those on the right. Thus showing the diameter of a cylinder is not limited to this or any other similar stairs.

Fig. 8 shows the moulds for the wreath.

The construction is precisely similar to that shown by Fig. 4.

◆

BUILDING NEWS SKETCH BOOK.

EXAMPLES OF HALF TIMBER CHURCHES.

THESE churches are now the only existing examples of their kind in the neighbourhood of Manchester, although several others are known to have existed in Cheshire. Denton dates back to "Edwardo IV., Septimo," while Warburton is supposed to derive its name from its founder, S. Werburge. The stone-built part (later than the wood-built) bears date 1645. Warburton is much as its builders left it. Denton has been "done up" during the last year or two.

◆

COMPETITION.

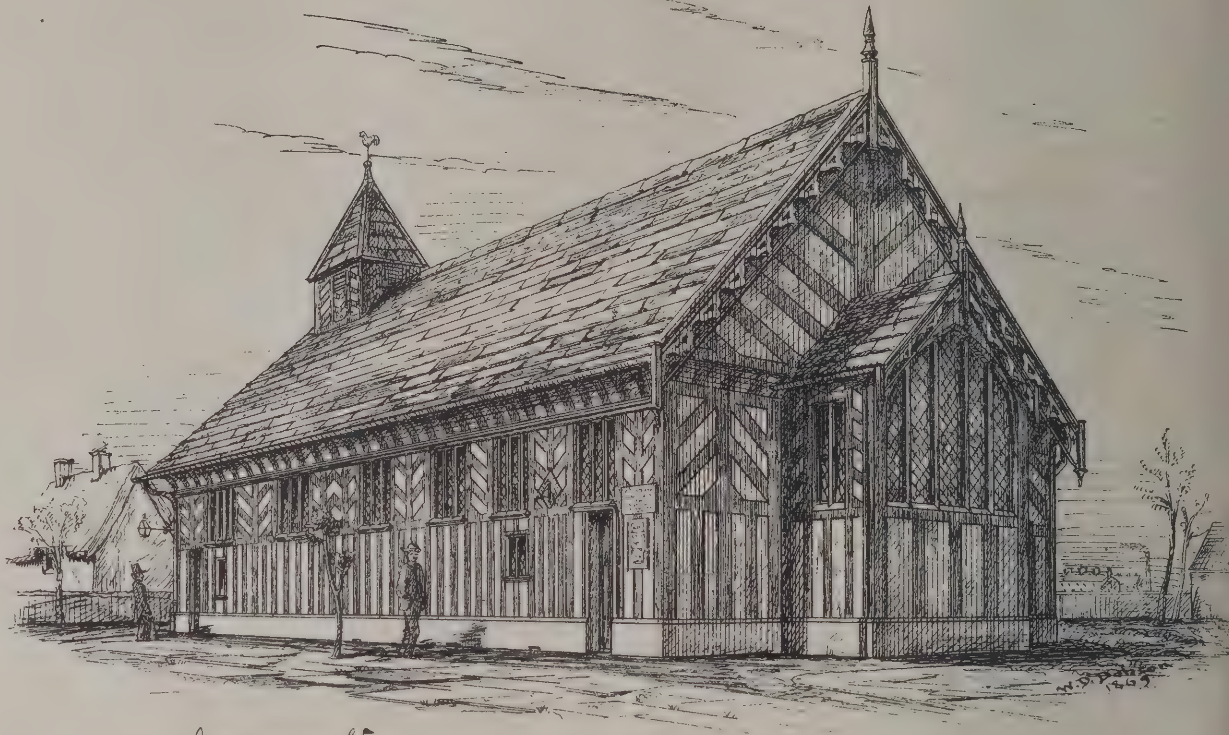
Farnworth.—Some time since the Local Board of Farnworth determined to build new offices, and invited plans for their erection. Those sent in by Mr. N. H. Hacking and Mr. Pickup were deemed most suitable, and a sum of £20 has been voted by the Board to be divided between those gentlemen. It has been decided, after all, only to enlarge the the old offices.

◆

Mr. Haywood, the engineer to the City Commissioners of Sewers, has reported to that body that it is the intention of one of the city gas companies to open up the Poultry for a short time to lay down pipes, but that it will occasion no injury to the new asphalte paving, as the repairs can be quickly made.

---

* This series of articles is a reproduction of Robert Riddell's work on the subject, published in Philadelphia, and by Trübner and Co., London.

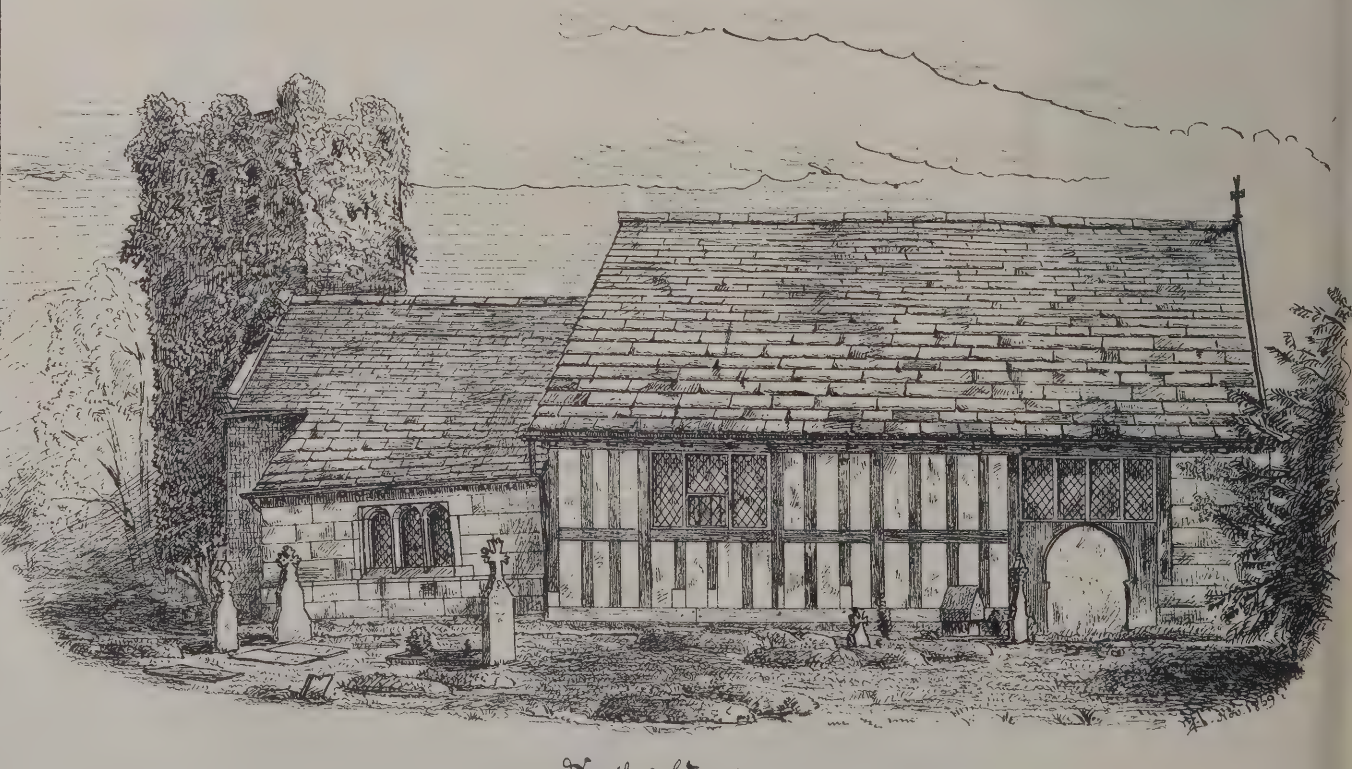


·South-east View·

·I· DENTON CHURCH, NEAR MANCHESTER·

EXAMPLES OF HALF-TIMBER CHURCHES

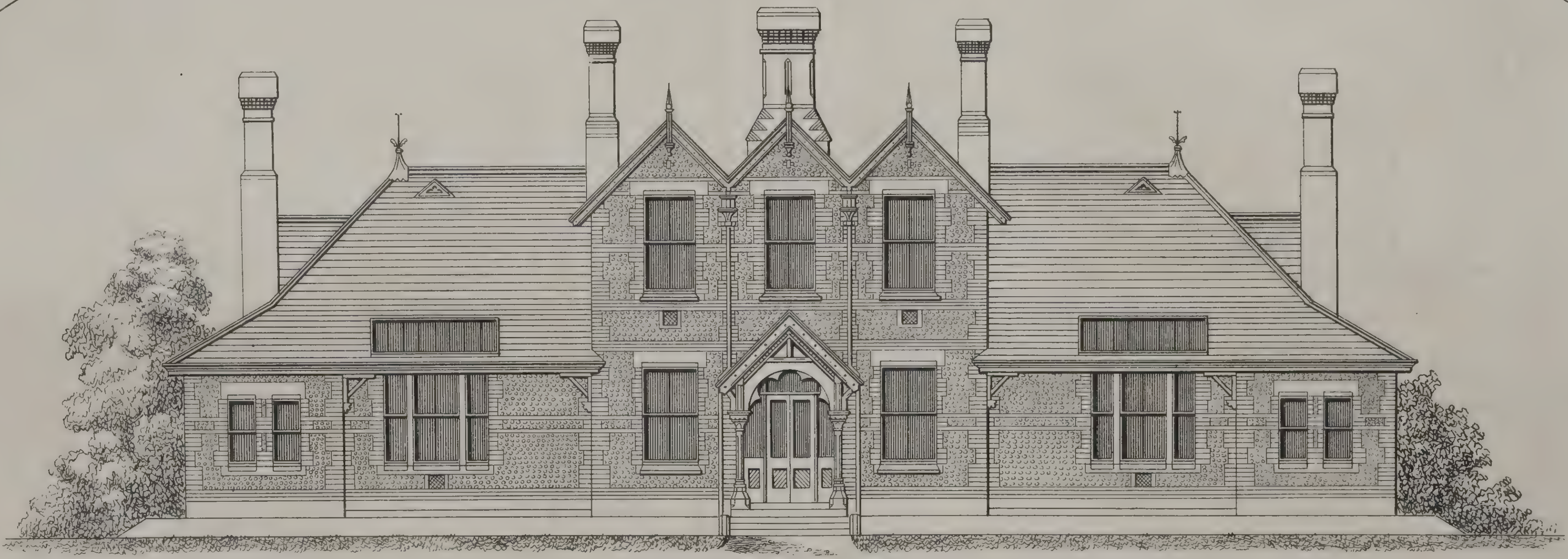
·II· WARBURTON CHURCH, CHESHIRE·



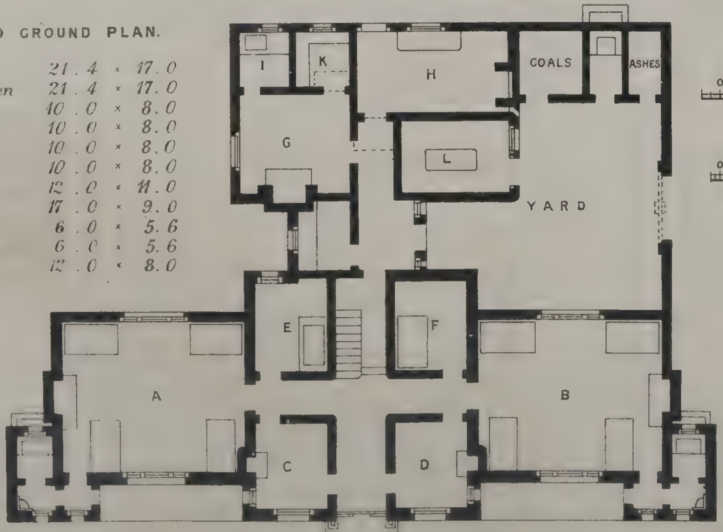
·North View·

Photo-Lithographed by Whiteman & Bass London

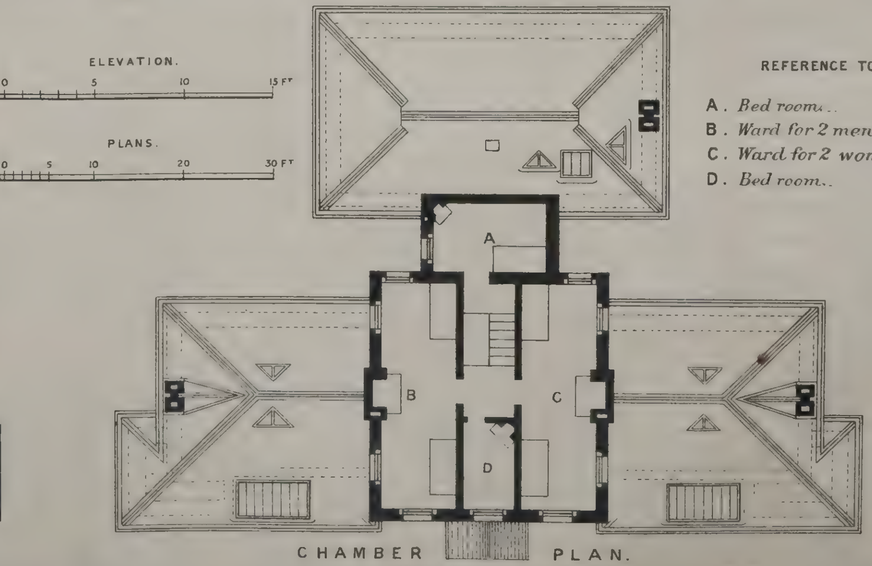
The Building News, Octr 21st 1870.



FRONT TO SOUTH.



GROUND PLAN.



CHAMBER PLAN.

REFERENCE TO GROUND PLAN.

A. *Ward for 4 men.*	21 . 4 × 17 . 0
B. *Ward for 4 women*	21 . 4 × 17 . 0
C. *Out patients..*	10 . 0 × 8 . 0
D. *Sitting room*	10 . 0 × 8 . 0
E. *Bath room..*	10 . 0 × 8 . 0
F. *Bed room*	10 . 0 × 8 . 0
G. *Kitchen*	12 . 0 × 11 . 0
H. *Washhouse*	17 . 0 × 9 . 0
I. *Scullery*	6 . 0 × 5 . 6
K. *Pantry.*	6 . 0 × 5 . 6
L. *Mortuary*	12 . 0 × 8 . 0

REFERENCE TO CHAMBER PLAN.

A. *Bed room.. ..*	13′ . 0″ × 8′ . 0″
B. *Ward for 2 men.*	25 . 6 × 8 . 0.
C. *Ward for 2 women..*	25 . 6 × 8 . 0.
D. *Bed room.. ..*	10 . 0 × 6 . 0.

Geo [illegible]
Printed by Whiteman & Bass.

COTTAGE HOSPITAL, LYTHAM.

COTTAGE HOSPITAL AT LYTHAM.

THE hospital, an illustration of which we give, is being built by Colonel Clifton, the lord of the manor. It comprises on the ground floor a ward for four men, and a similar ward for four women, respectively placed to the right and to the left of a central block of building containing, likewise on the ground floor, the chief entrance and the staircase, two rooms for the housekeeper or nurse, an out-patients' room, and a bath-room. Attached to each of the wards on the ground-floor, in a projecting building, is an earth closet entered from a lobby, in which is placed a sink for water supply, &c., and from the lobby access is given to a covered way or verandah, formed in the recesses between the projecting buildings containing the closets, &c., and the central block of building. These verandahs are on the south side of the building and overlook the beach. The central building only is two stories high, and on the upper floor comprises two wards, each for two beds, to the right and left of the staircase respectively, one ward being for men, the other for women, with an attendant's room between them. An additional bedroom is also provided, approached from the stairs landing; this room is over a projecting building at the back of the central block, and is intended to be used when required as a ward for highly infectious cases. Each ward will have fresh air admitted by gratings near the floor level, under control, and an opening in the ceiling for exit of vitiated air will be provided, in addition to which in each chimney breast a ventilating flue will be formed. All the wards and rooms will be warmed by open fireplaces. At the back of the hospital proper are a surgery, a side entrance door and vestibule, a kitchen, scullery, pantry, and washhouse, and entered from the enclosed yard is a mortuary, with some other conveniences. The building is being erected of brick quoins, and other dressings to opening, faced in panels with *cobble* stones, picked off the beach at Lytham. Bands of blue bricks are introduced, and the heads and sills to the windows and doors are of stone. The roofs will have eaves projecting considerably, and the gables will have cut vergeboards. A timber-framed porch will serve to protect the front entrance door. The general arrangement of the building was devised by Dr. Holland, of Prestwich; the architect is Mr. Henry Littler, of Manchester. The first stone of the hospital was laid on the 2nd Sept. by Miss Constantia Wood, niece of Mrs. Clifton, on which occasion Mr. Fair, Colonel Clifton's agent, presented a handsome silver trowel to the lady who kindly undertook to perform the ceremony.

◆

THE GAS SUPPLY OF THE CITY.

DR. LETHEBY, the chief gas examiner appointed by the Board of Trade, has recently presented to the Court of Common Council a report on the results of the daily testings of gas supplied to the City during the past quarter by the City of London, the Chartered, and the Great Central Companies. With respect to the illuminating power, he states that the common gas had ranged from an average of 16·93 standard sperm candles in the case of the Chartered Company at Gray's-inn-road, to 18·34 in that of the Great Central Company at Friendly-place, Mile-end. The average proportions of illuminating power at the several testing places had been as follows:—City of London Company Cannel gas 25·87, and common gas 17·37; Chartered Company, at Leadenhall-street, 17·64, and Gray's-inn-lane, 16·93; and Great Central Company, 18·34. The power had thus been at all times above the requirements of Act of Parliament. As regards impurity, sulphuretted hydrogen had not been present at any time in the gas of any of the companies during the quarter, and the amount of sulphur in any other form had ranged from an average of 13·28 grains per 100 cubic feet of the Cannel gas of the City of London, to 27·87 grains in the common gas of the Chartered Company. The *maximum*, *minimum*, and average amounts of sulphur were as follows:—City Company, Cannel gas, 17·5, 9·6, and 13·28; common gas, 26·4, 15·0, and 21·84; Chartered Company at Leadenhall-street, 27·6, 15·3, and 22·97, and at Gray's-inn-lane, 34·5, 18·1, and 27·87; and the Great Central Company, 31·7, 12·4, and 21·19. The amount of ammonia had not exceeded the prescribed quantity of five grains per 100 cubic feet, excepting on 12 occasions, from the 12th to the 25th of July last, when the gas of the Chartered Company at Leadenhall-street was overcharged with that impurity, but the excess arose from accidental circumstances over which the company had no control.

◆

BRICKMAKING BY MACHINERY.

MAJOR STAPYLTON, of Myton Hall, Helperby, near York, has just completed extensive works for the manufacture of bricks, the following description of which we take from the *Farmer*. The estate, under the able management of Mr. Calder, is undergoing great improvement, especially in the erection of model farm buildings and improved dwellings, requiring large quantities of bricks. To ensure making more solid bricks than by hand, and doing away with skilled labour, he has introduced machinery driven by steam-power, which enables him to produce bricks with beautifully smooth surfaces, quite equal to what are commonly known as the "patent bricks." This is all done in one operation, as follows:—After the clay is cast in the ordinary way, it is put into waggons, and by means of a rope connected with the machine it is hauled up a tramway and tipped on the rollers, which crush all foreign matter, such as stones, and thence enters the pug-mill, where it is thoroughly incorporated and made ready to enter the dies, from which it passes to the two cutting-tables, on each of which are cut at once six excellent bricks. The average production of this machine is 20,000 per day. They are not, as with the ordinary hand-made bricks, put upon "the flats," but walled up at once as they come from the machine, six or eight bricks high, thereby saving much expense in drying. Those bricks which are wanted for very particular purposes, such as "facing," are passed through a very ingenious machine—"the rotary press"—which performs its work of pressing, and thereby consolidating the bricks in the most efficient manner. A brick is simply placed in front of the piston, which then forces it into the mould or die (of which there are four on a revolving shaft) of the desired size, and any superfluous clay is cut off, thus making all the bricks perfectly true and of uniform dimensions. During the return of the piston, the box of dies or moulds revolves one-fourth of the way round, thus presenting another empty mould, which has already been oiled and cleaned by a self-acting lubricator, directly opposite the piston, to receive the next brick. In the meantime, a self-acting push plate forces the brick already pressed out of the die upon a self-acting table, which carries them away, each brick being impressed with the initials of the worthy Major.

Both of the machines we have described are driven by a horizontal engine of excellent construction; they are remarkable for their strength and simplicity of parts, and are the productions of Mr. John Whitehead, of Preston, Lancashire, whose name is well known in connection with brickmaking plant of all kinds. The drying-sheds and kilns, of the most modern principle, will also well repay inspection, and the whole working of what we may safely call these "model brick works" expresses the practical knowledge of the foreman in charge.

◆

OUR ANCIENT NATIONAL MONUMENTS.

THE mayor and corporation of the city of Rochester, influenced by a desire to preserve from decay and ruin the Castle of Rochester as one of our national monuments, have obtained from Lord Jersey a long lease of the Castle and surrounding grounds. The formal act of taking possession of it was celebrated on the 13th of October, by a meeting, and Sir John Lubbock called particular attention to the rapid destruction of our ancient national monuments which is continually going on. Avebury, he said, is a sad illustration. It must have been originally the grandest specimen of a megalithic or so-called Druidical monument in Britain or even in northern Europe. Old Aubrey said of it that it "doth as much exceed Stonehenge in grandeur as a cathedral doth an ordinary parish church." In the time of Charles II. sixty-three of its original stones still remained. Some years ago they were reduced to seventeen, and he feared that the number has since been still further diminished. In this case the stones were destroyed for the mere sake of the material, each stone being worth a few shillings—not, it is said, more than eight in any instance; and, in other cases, for the mere value of the ground on which the stones stood. Stonehenge itself is being gradually chipped away by barbarous excursionists. A part of the celebrated Devil's Dyke, at Newmarket, has been removed by the Jockey Club, an association of noblemen and gentlemen who ought to be ashamed of themselves for committing such an act of vandalism in order that they might use the earth of which it is composed to make a trial course for young racehorses. Last year it appears that the Great Tolmen, one of the most remarkable antiquities of Cornwall, was quarried away for the sake of the granite on which it stood. This spring, a portion of the celebrated Dorchester Camp, near Oxford, has been ploughed away by an ignorant farmer. Now, in such cases as these, it is a little difficult to know what steps the nation ought to take to ensure the preservation of these national monuments. In other instances, however, the case is clear. The celebrated stone at S. Vigians, on which there is an inscription in the Pictish language, the only one known to exist, stands unsheltered and unprotected in a country churchyard, exposed to every chance of injury from passers-by as well as to the inevitable effects of the weather. Again, the grand cross at Ruthwell, on which is a double inscription from the Vulgate, one in Roman characters and one in Runes, stands, in the same manner, entirely without protection. So also the stone at Newton, which has an inscription in an unknown tongue, is left in private possession. Under these circumstances, the Ethnological and some other societies have memorialized the Home Secretary, in the hope of inducing Government to take some steps for the preservation of these and other similar national ornaments. The Ethnological Society is also endeavouring to collect accurate records of the present condition of our megalithic antiquities. Two such reports have been received; one by Lieut. Oliver, on the Channel Islands, and the other by Mr. Spencer Bate, on the Dartmoor district. Even in the few months which have elapsed since these reports were made, two of the most interesting monuments described in them have already been destroyed. Under these circumstances, Sir John Lubbock congratulated the Mayor and Corporation of Rochester on the steps taken to preserve their ancient castle, and hoped so excellent an example might be followed by the authorites in other parts of our country.

◆

THE HISTORICAL DEVELOPMENT OF ORNAMENTAL ART.[*]—LECTURE II.

IN crystals we can trace the law of direction and proportion. The single rays are articulated, the articulation taking place in accordance with the direction of the fluid. In organic forms proportion is more developed; thus we see in the formations of the animal and vegetable kingdoms a certain force actively following out the law of gravitation, working on the one side apparently independent of it, and on the other independent of the will of the living organism, finding the essence of their existence in an harmonious balance of this conflict. In the human form freedom of will and movement are perfectly balanced with the elements of expression and action. In plants, vital energy, or the dynamic force of growth, is opposed to gravitation, and finds expression in a vertical direction upwards. This opposition of the dynamic to the static force produces the conoidal or flaming form. The force of growth can be expressed in two ways only, one upwards, and the other round the stem or trunk. In most animals the vertebræ is horizontal, and coincident with the motion of the whole creature. In man, however, it is vertical, forming a right angle with its horizontal basis. Direction in men and animals is of two kinds, from below, upwards, and from fore backwards. Motion in them, as the element of the dynamic force, must be counteracted by the bodies representing the static force, gravitating towards the earth. Motion leads to expression and action—expression referring to the active or passive state of the mind and body; action relating to the movements of the limbs and the whole body. Four principal controlling elements can be traced, which point out the preponderance of certain forms as visible representatives of a general principle, bringing about unity and harmony; these are: eurithmy, proportion, direction or motion, and expression. Ornamentation rises from a striving to express these elements. Thus the ornamented object becomes the sign or mark for the ornament itself—as for instance in clasps, brooches, buckles, &c., which represent the idea of fastening or keeping together. A sign or mark is to be observed at a very early stage in monumental art, as in the tumuli, and later on in the roughly-constructed tombs in Phrygia, Greece, and Italy. It was more fully developed in the monuments of Central America and Assyria, crystallized in the pyramids, and refined in the tombs of Mausolus, Augustus, and Hadrian. The sign is presented in a most interesting form when it is surrounded by rhythmically-arranged stone circles, as a visible expression of the union of the many for a single purpose. The sign reflects on one side the idea of harmony, whilst the periphery becomes a powerful total augmenting the force of the ruling element. As examples of this we have the stone monuments of Carnac, Avebury, Stonehenge, &c. Linear symmetry shows itself in leaves, branches, animals and men, in all objects of art, more particularly in monuments. It consists of the grouping of the whole object, on an horizontal basis, round a vertical axis. This axis is the seat of the linear symmetrical element. Proportion as an element never works alone, but is either in connection with the cosmical element, or with that of motion. It requires a basis, a middle piece, and a dominant. This is carried out in plants and trees, where we have the root as basis, the stem or trunk as middle-piece, and the flower, top, or crown as dominant. The basis represents the cosmical element of union, by powerful masses, simplicity of forms, dark colouring, and a greater number of pillars; it is expressive of the static force from which the dynamic element rises. The middle-piece is at the same time supported and supporting, and is the connecting link between the two extremes. The dominant is the result, the crowning-point of the dynamic force, distinguished by a variety of members, by rich ornamentation, and by a concentration of all the characteristics of the special object of art. It is the summit, the crown, the head of the whole. Direction, or motion is, in its highest development, only found in man. In a fish, for instance, the axis or seat of the symmetrical element is not fixed, as in plants. He pursues a crumb or other object thrown into the water; this is his point of attraction, and has for him a static force. Thus in the fish a conflict between the two forces is never observable—motion in him is always one-sided. How different this is with man. He is master of his motions, his will, a conscious force in him, intellect directs the static as well as the dynamic force. He is the high symbol of perfection, because in him, as a detached small world, a microcosm, all the elements of the macrocosm are united. In him motion finds expression; in him expression attains the very highest power of the beautiful. Man is, however, not equally formed; we find distinctive characteristics in him. "Art," says Winkelmann, "ought to begin like wisdom, with a knowledge of ourselves."

---

[*] Abstract of a lecture delivered by Dr. G. G. ZERFFI at the School of Science and Art, South Kensington Museum, on Tuesday, Oct. 18.

> Know then thyself, presume not God to scan,
> The proper study of mankind is man!

said Pope, in his "Essay on Man." The artist has to occupy himself with all that interests, delights, or excites man. The study of man must, therefore, be most important for him. Man placed on this globe is a ray of the earth, a detached ray, placed in a vertical line on the horizontal basis formed by the earth itself. The axis of his body is part of the diameter of the earth. With his intellect he appears to connect earth and heaven. The vertical line passing through man's body divides it into two symmetrical parts, and cutting the double organs at an equal distance, divides the single ones. This symmetrical division holds good only so far as the total is concerned. The parts taken separately break through all uniformity. The arms are longer than the trunk, the legs than the arms, and legs and arms end in feet and hands subdivided into toes and fingers. Yet notwithstanding this want of symmetry, there is harmony, which in man is the result of conflicting analogies. All this, however, applies only to one race of men, the White, the Aryan. The lecturer then, taking the three races given by Jacquinot, viz., the black, yellow, and white, as a basis, entered into their characteristics, showing the inferior power of the black and yellow as compared with the white. He exemplified this by describing their dwellings; those of the black being triangular, those of the yellow square, and those of the white a combination of the two, together with the dome or arch introduced only by them. In conclusion Dr. Zerffi illustrated, by means of an ingenious diagram, the working of the static and dynamic forces in mankind.

VISIT TO ALNWICK CASTLE.

ONE of the most enjoyable excursions in connection with the recent visit of the Social Science Association to the North was undoubtedly that which was on the 28th ult. paid to the domains of the Duke of Northumberland, at Alnwick. A large party of ladies and gentlemen proceeded by special train from the Central Station, Newcastle, to Alnwick, and there, being headed by the Rev. Dr. Bruce, made a hasty inspection of the Hotspur Gate as they passed through the old-fashioned town to the Castle. Before entering the Barbican Gate, the doctor gave a detailed account of the grand pile which they had been invited to inspect; and again, at intervals, he pointed out the many architectural beauties of the structure, and recounted several of the startling incidents of which it had been the scene. Alnwick Castle, the ancestral home of the historic house of Percy, is one of the finest examples of a feudal fortress in the country. Situated on a commanding elevation on the south side of the river Alne, its position and enormous strength—in ancient days at least, when the heavy siege guns and other formidable engines of attack familiar to the present day were unknown—rendered it well-nigh impregnable. There is reason to believe that a fort existed on the site of the Castle during the Roman occupation, and that the Castle in its original shape was first erected by the Saxons. No trace of the Roman structure has, however, we believe, ever been discovered, but Saxon architecture is distinctly recognisable in the zig-zag fretwork round the arch which leads into the main court, and perhaps in some other portions of the magnificent pile. It has been suggested by Grose that this arch was not the most ancient entrance, and his suggestion derives support from the fact that under the flag tower, before that part of the castle was rebuilt, were found clear indications of a gateway, which had been walled up, directly fronting the present exterior gatehouse towards the town. Age, and the rude shocks it had sustained through many centuries, had reduced the castle to a ruinous state, when in 1847 it fell into the possession of Algernon, the fourth Duke, better known as "Algernon the Munificent," who immediately, says Grose, "set to repair the same, and with the most consummate taste and judgment restored and embellished it as much as possible, in the true Gothic style, so that it may deservedly be considered as one of the noblest and most magnificent models of a great baronial castle. An area of about five acres is enclosed by the walls of the castle, which at present consists of a vast pile of buildings forming for the most part massive towers in the mediæval style, the surrounding walls being flanked by sixteen smaller towers. The entrance from the town is through an ancient outwork called the Barbican—two solid walls of masonry enclosing a passage-way, along which the visitor walks to the Gate-house, which is surmounted with stone figures of armed men fixed to the parapet. Similar picturesque figures are to be seen placed at regular intervals on the battlements of other ancient fortresses in the North, but nowhere else in such number and completeness as at Alnwick. From the gateway the outer wall of the castle runs north and south, and turning south we arrive at the stables, stable-yard, and riding-school, which lie outside the castle proper, and are erected on a scale of great magnificence. The estate offices are placed at the angle where the wall turns to the east, and still following the course of the wall, the auditor's tower is reached, admittance being gained to the interior of the castle through the second gateway. On one side are the kitchens, in the design and construction of which great care has been bestowed, and beneath them are the coal cellars. The staircase is of singular form, and its roof is ornamented with a series of shields of arms, one hundred and twenty-one in number, borne by the different families with whom the Percys have been allied. The first room which is reached is 42ft. in length, and 89ft. in breadth, and is hung with portraits of successive Earls of Northumberland. Then comes the drawing room, 47ft. long by 36ft. broad, remarkable for its splendid oriel window. The dining room is 54ft. long, 21ft. wide, and 27ft. high. In this room is the silver-gilt shield of Achilles, a celebrated work of art. On quitting the state rooms, the inner Baily and old keep with its high towers guarding the inner court may be visited. Much of the work in this portion of the castle is of the time of the De Vescis (*circa* 1150) and the first and second Percys (1309-1350). Here, too, is a noble Norman gateway, with the usual characteristic armaments, boldly executed and in a fine state of preservation. Many other interesting towers and defences remain within the walls, amongst which may be specially mentioned the Ravine Tower and Hotspur's chair, the repaired breach in the walls, called the "Bloody Gap," the Constable's Tower, the Postern Tower, and the Abbot's Tower. The chapel fills all the space of the middle ward, and its architectural features are striking and harmonious; its great east window is a copy of one of the finest in York Minster, and the groining of the roof is copied from that of the roof of King's College Chapel, Cambridge; and the walls are, we believe, painted in the manner of the celebrated cathedral of Milan, and present the genealogical table of the house of Northumberland. The library is a magnificent apartment, admirably adapted to the purpose it serves. On the upper floor of the Constable's Tower is, or was a few years ago, an armoury containing 1,500 stand of arms, arranged in beautiful order, which were used by the Percy tenantry at the time of the threatened invasion by the first Napoleon. The park abounds in scenery of rich and various beauty, and contains the ruins of two abbeys; one that of the Præmonstratensian Canons, founded in 1147 by Eustace Fitz John; the other Hulne Abbey, founded by a Crusader in 1240. Malcolm's Cross, a memorial of the fall of King Malcolm and his son, at the siege of Alnwick, in 1093, was rebuilt in 1774, by the then Duchess of Northumberland, a lineal descendant of the Scottish monarch. At the time of the conquest, Gilbert Tyson was the owner of the castle and barony of Alnwick; and on his death, at the battle of Hastings, the Norman lords de Vesci became the possessors. Their possession continued till 1297, when the castle and barony were bequeathed by the license of Edward I. to the Bishop of Durham. They were shortly afterwards purchased by Lord Henry de Percy, from whom they have been regularly transmitted to the present duke. Lord Henry, to whom the transfer of the castle was made in 1310, says the Rev. C. H. Hartshorne (than whom no better authority on the subject can be cited), in his "Feudal and Military Antiquities of Northumberland and the Scottish Borders," may be said to have re-erected the castle, since he built, commencing with the entrance, the following towers from their foundations:—The Barbican and gatehouse of approach, the Western Garret and the Abbot's Tower, the Falconer's Tower, the Armourer's Tower, the Postern Tower or Sallyport, the Constable's Tower, the Ravine Tower, the tower or gateway between the outer and middle Baily, great portion of the east side of the Keep, the well, and in all probability a tower standing on the foundations of the present Round Tower, as well as all the intermediate ones westward of the Barbican. Lord Henry, the first Lord of Alnwick of the Percy family, was succeeded by his son, a minor at his father's death. To him is attributed the erection of the two octagonal towers of entrance into the inner Baily, to which Mr. Hartshorne assigns the date *circa* 1350, and he probably at the same time repaired the battlements of the adjacent gateway communicating between the outer and middle Baily. Henry Percy, the son of Hotspur, and sixth Lord of Alnwick, probably effected the next great restoration, the repair of the great western curtain wall, between 1425 and 1450. He procured a royal license for embattling the town of Alnwick in 1434, and had already built the Keep at Warkworth. A long interval devoid of architectural evidences then follows, but several surveys made in the sixteenth century afford complete and authentic information as to the state of the castle at the periods to which they refer. In process of time the accommodation afforded by the castle became too restricted, and Hugh, Duke of Northumberland, in 1764, added new rooms to the building by consolidating the curtain walls on the west side. It was Algernon, fourth Duke of Northumberland, who built the Prudhoe Tower. The hall, says Mr. Hartshorne, has undergone two distinct changes. First of all it shared the renovation of Hugh, Duke of Northumberland, about a century ago, who made it as handsome a room as the knowledge of Gothic architecture prevalent at that period permitted. The ravages of time, however, told upon the noble structure which had for centuries been devoted to revelry and hospitality, and its foundations were found to have yielded to the superincumbent weight of masonry. There was danger of its falling, and it was ultimately, in the year 1855, found necessary to take down some, and to consolidate other walls, the result being the present hall, which, with slightly altered proportions, occupies the origina site. The examination which preceded this work, adds Mr. Hartshorne, "revealed a most curious specimen of domestic architecture during the middle ages, showing not only the exact dimensions of the former baronial hall of the first Percy, but the various arrangements that were adopted for entertainments and for convenience."

◆

ART IN SWEDEN.

SWEDEN (says the *Saturday Review*) is fortunate in her capital. Stockholm may be compared to Constantinople in miniature. Stockholm is Queen of the Baltic, as Venice is Queen of the Adriatic; the sea is in her streets, merchandise is brought to her doors along the noiseless highway of waters. The arts, as usual, have followed in the wake of commerce. But the developments have been unequal. Thus architecture, as may readily be imagined, has lagged behind. In Scandinavia, as in Switzerland, the abundance of wood and the poverty of the people long retarded the use of stone; moreover, the Gothic style, as employed, for example, in the cathedrals of Upsala and Abo, seems to have been imperfectly understood; in construction and ornament these imposing churches are at once massive and barbaric. Again, it is cause for regret that of late years the whole of Northern Europe has fallen a prey to the Italian Renaissance. Consequently there is not a capital on the shores of the Baltic which can claim a national style; every street shows that foreign ideas from afar have not only been stolen wholesale, but that even the most commonplace forms, when stolen, have been perverted and spoilt. This lack of originating power among Northern nations, felt in all arts about equally, is the most discouraging trait in the future of lands struggling to gain modern civilisation. The Royal Palace, of which Stockholm is justly proud, would look more at home on the shores of Genoa, while its handsome *vis a vis* across the water, the new Art Museum, comes from Berlin. Neither does Stockholm assert originality in her public statues. Scandinavian sculpture is a blank from the era of Runic knots, and its nationality became hopeless when Italians engrafted on the old stock modern grace and debility. That the present Swedish school, if school it can be called, is a foreign importation seems sufficiently evident in the fact that the style was borrowed from Canova, and that the marble was transported from Carrara. The public statues in the streets of Stockholm are, almost without exception, beneath criticism. Yet works have been preserved within the National Museum which, somewhat to the surprise of the traveller, tell that Sweden, during the last and even in the present generation, has made strenuous efforts to achieve renown in the sculptor's art. In the review of the plastic efforts presumed to adorn the Swedish capital, our contemporary is disposed to regard the whole school as a profound mistake. Semi-nudes, which for six months in the year are festooned with icicles, must surely be out of place. Moreover, just as man in these latitudes needs the thick and clumsy covering of skins and furs, so there is denied to the peasant-born artists of Scandinavia that subtle sense of form, the recognition of the ideal type in humanity, which belonged to the Greeks. Wide as the poles asunder is and must be the sculptor's art on the shores of the Mediterranean and of the Baltic. Scandinavia has sold her birthright; she had an ancient mythology which would have cast well into the granite of her rocks, but she has chosen to chisel softly in whitest marble dancing girls in diaphanous draperies. Venuses of Southern birth are an absurd solecism. It would have been better for the sculptors of the far North to have moulded their styles on the rugged stonework of Gothic cathedrals. Figures on Notre Dame at Paris, at Chartres, and at Rheims, were fitter models than the works of Canova. And Swedish sculptors, if bent upon Italy, might have chosen more wisely; instead of following the example of Thorwaldsen, whose success has been a snare to the artists of Scandinavia, they should have reverted to that Northern life in the Italy of the eleventh and twelfth centuries, which brought nerve to an art that had fallen enervated; they should have studied Lombard sculpture, and have thrown themselves, in Florence, Pisa, and Orvieto, into the thought and manner of the Pisani and Orcagna. Thus the hybrid brood of classic gods and goddesses who now over-run the galleries of the North might be thrust out, and their place taken by a stalwart race, cast in stone from the mountain, or carved in wood from the forest, who might claim kindred with the giants and heroes of Scandinavian Edda and Saga.

Sweden, following the good example of other lands, has of late years erected in her capital two handsome and capacious museums, the one devoted to natural history, the other to the arts. The latter, which was designed to receive collections previously scattered, contains on the ground-floor a museum of Northern antiquities scarcely surpassed by that at Copenhagen. In the gallery above are distributed coins, arms, engravings, and original drawings, Egyptian antiquities, Etruscan vases, classic and modern Swedish sculpture. The top story, reached by stately stairs, which the Prussian architect evidently imported from Germany, is almost entirely devoted to pictures. The catalogue shows a total of 1,042 works here massed together, from the King's Palace and other royal collections. The gallery, notwithstanding more than a common percentage of dubious examples, fairly represents the usual historic schools. The strongest sections are the Dutch and the Swedish. Only the latter, which numbers 106 representative works, will add to the traveller's knowledge. Painting, like architecture and sculpture, has in Stockholm passed through tentative stages. The arts, having taken false steps, have run into failure; the soil is sterile, and whatever is planted may languish and possibly die. High art has been the nation's bane. Neither can it be supposed that the united kingdoms of Norway and Sweden have a career of historic art before them. Within the period of recent growth Scandinavia has not been enacting history. She has dug canals, constructed railways, built ships, planted and felled forests, but she has done little on land or sea which an historic painter would care to record. Swedish painters are wise when they attempt nothing more ambitious than the *genre* of history. Yet it is interesting to find the essentially Southern art of fresco penetrating so far North as Upsala, and it is also satisfactory to note that the wall-paintings executed in the apse of the cathedral there in 1831 by Professor Sandberg were, in July last, still in good preservation. It seems strange that Swedish artists should succeed in fresco while our English artists have failed.

◆

RUSKIN'S LECTURES ON ART.*

By STOPFORD A. BROOKE.

(From *Macmillan's Magazine* for Oct. 1870.)

(*Concluded from page* 283.)

PROFESSOR RUSKIN goes still further with respect to Art. After speaking in his best manner of the day's work of a man like Mantegna or Veronese, and of the unfaltering, uninterrupted succession of movements of the hand more precise than those of a skilful fencer; of the muscular precision and the intellectual strain of such movement, and of its being governed every instant by direct and new intention, and of this sustained all life long, with visible increase of power,—he turns round and adds: "Consider, so far as you know anything of physiology, what sort of an ethical state of body and mind that means! Ethic through ages past! What fineness of race there must be to get it; what exquisite balance of the vital powers! And then, finally, determine for yourselves whether a manhood like that is consistent with any viciousness of soul, mean anxiety or gnawing lust, any wretchedness of spite or remorse, any consciousness of rebellion against law of God or man," &c. &c. (p. 72). In this he has left his modifications behind and swept back to his large statement, and, without denying the portion of truth in the sentence, it is plain that the inference is not at all a necessary one. These qualities of the artist may be the result, partly of natural gift, and partly of a previous art development, into the advantages of which he steps at once. They presuppose that the artist has been born into a school which has brought its methods up to a certain point of perfection, from which a completer development is possible. His genius adds to the past what was needed to perfect it, and Titian or Turner orb their special Art into its perfect sphere. The ethic state into which Ruskin demands that he should be placed, because of his precise hand, may not be an ethic state at all. His absolute power of touch says, it is true, that neither the artist himself nor his parents were desperate drunkards nor imprudent sensualists, that they kept their physical frame in fine order. But does that prove his morality or that of his parents? A calculating sensualist, who is prudent in his indulgence, may have a healthier body than the man who has fought against sensualism all his life. A man may be a liar or a thief, and his bodily powers be in exquisite harmony. Fineness of race does not prove an antecedent morality, nor perfection of handling an artist's truth or honesty.

Again, he may have the patient power of a great master, his government of the hand by selective thought, his perception of the just harmony of colour, and the man himself be at the same time neither patient, nor temperate, nor pure in his daily life. For all artists can lead a double life, life in the world and life in their art; and genius and morality are two things, not one. Their several qualities resemble one another, but they are not identical. The intense industry of genius, its patience, its temperance in the centre of passion, are of its very nature; but outside the sphere of an artist's work, in matters of common life, where these qualities would become moral in resistance to sloth, to bad temper, and to sensual indulgence, they may and do completely fail; nay, even the restraint of the studio may lead directly to absence of restraint in the world. One cannot argue as Ruskin does from the possession of the one to the possession of the other, though we may with him distinctly argue from the artist's search for lovely forms, and thoughts to express, to his moral temper. We partly agree then and partly disagree with our writer, but we have no hope that people in general will ever know clearly whether they agree or disagree with Mr. Ruskin on this subject till he tells us plainly what he means by a moral state, for surely the prevalence of kindness and order in a character does not sum up the whole of its meaning.

With regard to the aim of Art, Ruskin is much clearer than on the question of Art in relation to Morality. He can no longer be attacked on the ground that he denies that the first aim of Art should be to give a high pleasure, for he states plainly that every good piece of art involves essentially and first the evidence of human skill and the formation of an actually beautiful thing by it. We agree with him that, beyond this, Art may have two other objects, Truth and Serviceableness. Mr. Ruskin has done no work so well and so usefully as that in which he has proved that great Art is always true, and that so far as it does not represent the facts of things, it is neither vital nor beautiful. The statement has naturally to be modified when one comes to ideal pictures, but it bears modification without the contradiction of its principle; and the mode in which, in the "Modern Painters," these modifications are worked out within the sphere of the original statements is equally subtle and true. The necessity that there should be serviceableness as one element of the artist's conception appears chiefly in the Art of Architecture, and the general reception of the idea that everything in a building should be motivé towards the purpose of the building is largely due to the "Stones of Venice" and the "Seven Lamps of Architecture." In the present lecture on "The Relation of Art to Use," he goes, we think, too far. The usefulness of truthful portraiture no man denies, but we do not believe in Art being serviceable to Geology, Botany, and History, except on the condition of its ceasing to be art. The great artist can draw mountains accurately without knowing geology, and flowers without knowing botany; but he cannot help either geologist or botanist by work which, if it is imaginative, must generalize truth. Moreover, it is waste of time; as great a waste of time as Ruskin himself makes when he torments himself with business. A section of Skiddaw, sufficient for all purposes, can be drawn by any pupil in the School of Mines. Again, in the matter of history, it is a very pretty pastime to illustrate Carlyle's Frederick to draw the tomb of Henry the Fowler, or the battle-field of Minden; but so far as service to the historian is concerned, a photograph of the tomb and a map of the field by the Ordnance Survey would be far more useful. The artist would paint his impressions of the tomb and of the field of battle; the pictures would be delightful, but Turnerian topography would not assist the historian much.

Art is not to be a handmaid to Science or History, but to exist only within her own sphere and for her own ends. Her utility is in the communication of beauty and the giving of a noble enjoyment. She is the handmaid, not of any particular class of men, but of mankind, and the best advice to give to students who wish to make art useful is this, "Don't draw for the help of Science or History, draw for your own delight in Nature and Humanity—and to increase the delight of others. If your work lives to stir or confirm an enduring energy, or to kindle a true feeling, or to lead men to look more wisely, kindly, or closely at the life of humanity or the world of nature, it will be of more ennobling usefulness than all the labours of scientific or historical scholars. Let this be your aim, to give high pleasure to men, and to sacrifice your life for that. Then he usefulness of your art is secured."

---

* Lectures on Art, delivered before the University of Oxford, &c. By JOHN RUSKIN, M.A., Slade Professor of Fine Art. Oxford: Clarendon Press, 1870.

We have left ourselves but little space in which to speak of the three last practical lectures on "Line," "Light," and "Colour." They go straight, with the inevitable digressions intermixed, to the objects of the Art School. The conception which Ruskin has of those objects is different from the usual one, but it is none the worse for that. It is well that one professor at least should see that one of the first aims of an art school at a university should be to teach young men to see beautiful natural fact and to love its beauty. In after life they will demand it of artists, and the demand will react with benefit both on artists and art. They cannot learn this better than by drawing natural objects with accuracy. Ruskin has given himself to the teaching of this, and his method seems to be admirable. We refer our readers to the Lectures, but his main object, in his own words, is this, to teach his pupils "to draw spaces of their true shape, and to fill them in with colours which shall match their colours." He is right in dwelling upon colour more than on light and shade, and in his protest against the theory that shadow is an absence of colour. No words in the whole Lectures, considered not only as truth, but as establishing in his hearers' minds a true ideal of Art, are more important than these two sentences. "Shadow is necessary to the full presence of colour, for every colour is a diminished quantity or energy of light, and, practically, it follows, from what I have just told you, that every light in painting is a shadow to higher lights, and every shadow a light to lower shadows; that also every colour in painting must be a shadow to some brighter colour and a light to some darker one, all the while being a positive colour itself. And the great splendour of the Venetian school arises from their having seen and held from the beginning this great fact—that shadow is as much colour as light, often much more . . . . while the practice of the Bolognese and Roman schools in drawing their shadows always dark and cold renders *perfect* painting impossible in those schools." That is one sentence; here is the other: "Whether you fill your spaces with colours or with shadows, they must be equally of the true outline and in true gradations. Without perfect delineation of form and perfect gradation of space, neither noble colour is possible nor noble light." Principles of these kinds worked out in teaching and taught by personal superintendence will make some of his pupils good workmen, and all good judges of the general aspects of art. To illustrate these things and others, and to inspire the students, Professor Ruskin, with a noble generosity for which he has not been sufficiently thanked—he has been so often generous that men have come to look upon his gifts as they look upon the gifts of air and light, so common that one forgets to be grateful—he has given to the School of Art a whole collection of examples, many of them of great value and rarity, and many of them his own personal work, the result of years of accurate study and patient drawing. There are some artists who have been impertinent enough to despise and even to deny the artistic quality of Ruskin's work. But many of these drawings of flowers, of shells, of old buildings, and especially of such stonework as Gothic capitals, Venetian doorways, the porches of cathedrals, are of the highest excellence, and possess a quality of touch and an imaginative sympathy with the thing represented, combined with an exquisite generalization of truth for which we look in vain in the work of many artists whose names stand high.

We believe that by Ruskin's work at the Art School in Oxford this result at least will be attained, that the young men who afterwards will become, by their wealth, patrons and buyers of art, will know good work when they see it, and be able and willing to rescue from the ruin of Italian restorers and destroyers pictures which are now perishing, unpitied and unknown. They will cease to waste their money. The expenditure, at present, of rich people, on the most contemptible nicknacks, on Swiss cottages and silver filagree, and Florentine frames and copies on china at Dresden and pietra dura, is as pitiable as it is incredible. Room after room in large houses is filled with trash which ought to be destroyed at once, for the demand for it keeps a mass of men producing things which are only worthy to pave roads with. The very production of copies of pictures is in itself a crime, and the only thing which is worse is the buying of them.

But we must close our paper. We have spoken with openness of the faults which we find in Professor Ruskin's work, and it has been difficult to assume the critic: for our own gratitude to him has been and is so deep, and we are so persuaded of the influence for good which he has had on England, that blame had to become as great a duty as praise before we could express it. And even in the midst of our blame, we felt the blessing of contact with a person of a strong individuality, the pleasure of meeting in the middle of a number of writers cut out after the same pattern, with one who cuts out his own pattern and alters it year by year. His theories may, many of them, be absurd, but we may well put up with the absurdity of some for the sake of the excellence of others, more especially for the sake of the careful work which hangs on to them and can be considered apart from them. We should be dismayed to lose the most original man in England. It is quite an infinite refreshment to come across a person who can gravely propose to banish from England all manufactories which require the use of fire, who has the quiet audacity to contradict himself in the face of all the reviewers, and who spins his web of fancies and thoughts without caring a straw what the world thinks of them. The good which a man of so marked an originality does to us all is great, if it is provoking; and we had rather possess him with his errors than a hundred steady-going writers who can give solemn reason for all they say. The intellectual excitement which he awakens, the delight and anger which he kindles in opposite characters, and the way in which his words create a stir of debate, marks the man of genius whose mistakes are often as good as other persons' victories, and who from this very quality of individuality, united to the personal attractiveness of his simple and sympathetic humanity, is calculated to be of great and lasting good to Oxford.

We have read many lectures on Art Subjects, many books on Art Criticism. They have their merits, merits which Mr. Ruskin's work does not possess. They are formal, easily understood, carefully arranged; all scattered thought, or impetuous fancy, or wild theory is banished from their pages. We walk through a cultivated garden, the beds are trimly laid down, the paths are neat and straight, the grass is closely shaven, the trees are trees of culture, the very limes on the edge are kept in order, and walls surround it on all sides. At last, on the very outskirts of the garden, beyond the bounding wall, and looked down upon by a row of pert hollyhocks who have in the course of many seasons arrived at the power of producing double flowers in an artistic manner, we catch a glimpse of a wild bit of grassy land, full of grey boulders and some noble trees growing as they like it, and below a brook chattering pleasantly over the stones. Every flower of the field blooms here and runs in and out among the rocks and roots after its own sweet will. The woodbine, the wild rose sprays, the ivy and moss, play the maddest and the prettiest pranks by the brook-side. The sky is blue above, with a world of drifting clouds, and the ground below is a mystery of light and colour. It is true there are burnt spaces of grass here and there, and clusters of weeds, and now and then a decayed tree stem; but for all that, when we see the pleasant place, we do not think twice about it, we forget our garden, we leap the wall—and we live far more than half of our art life with the books of Ruskin.

◆

ARCHITECTS' ASSISTANTS IN AMERICA.

IN "Intercommunication" (No. 1893) in our number for July 15 last, a correspondent inquired if there is any method by which an English draughtsman can get an introduction to an assistancy in America. The many assistants who know too well the crowded state of the profession in this country would perhaps do well to consider the following paragraph, which we extract from the *American Builder*:—

The *Building News* of July inquires if there is any method by which an English draughtsman can get an introduction to an assistancy in America, stating that there are too many architects' assistants in England.

We would reply, that no other introduction than personal merit is required. Competent architectural assistants are very scarce in the United States, poor ones are in excess everywhere. A man of ability and experience can always obtain a permanent situation at good compensation, and we would gladly welcome many such to the city of Chicago alone; our leading architects will gladly secure their services, indeed, we know that one of them has recently sent to England for an assistant, owing to the difficulty of obtaining those of ability in sufficient number in this country. We were, last month, in the office of a well-known architect in New York City, and were informed that his two ablest assistants had been sent to him from England, he paying their expenses and contracting with them for a year.

The United States would certainly seem to offer a fair field for some of the unemployed of the profession. Wealth is abundant in the States, and where men are wealthy they will spend money on art of some kind. At present it is well known American architecture is not of the kind most to be desired. A purer taste does seem, however, to be taking root there, and it may be that American architects, who have not the advantages of the study of the old examples which England affords, may welcome to their offices those who can really aid them. A New York man, who some time since was instrumental in largely increasing the circulation of our journal in that city, said to us while in this country: "American architects will look at once at anything English. We know we have no architecture in America worth calling such; but that is partly because up to the present time there has been no demand for it, and partly because the facilities of art instruction and intercommunication between architects and artists do not exist among us like they do in England. A first-rate English architect would find no difficulty in establishing himself in New York."

◆

NORTHAMPTONSHIRE ARCHITECTURAL SOCIETY.

THE annual meeting of the members of the Northamptonshire Architectural Society took place last week. The peculiar features of the churches visited were pointed out and described by Lord Alwyne Compton, who also related many interesting facts in connection with the different parishes. The churches visited were Earls Barton, Grendon, Wollaston, Strixton, Bozeat, Easton Maudit, Yardley Hastings, Castle Ashby, Whiston, and Cogenhoe. At the meeting in the evening, at the Assembly Rooms, Northampton, a paper "On the Choral Arrangement of Churches" was read by the Rev. Owen Davys, and one "On the Connection of Architecture with Freemasonry, and on Masons' Marks" was read by the Rev. H. J. Bigge. The Rev. F. W. Goodacre was elected a member of the society, and the Rev. M. W. Gregory was elected an hon. secretary. A statement of accounts read by the Rev. H. Ward, the treasurer, showed that the payments last year, including life subscriptions to the amount of £30, added to the deposit account, amounted to £111 11s. 3d. The receipts, including a balance of £74 9s. 7d. at the beginning of the year, amounted to £231 18s. 1d., leaving the deposit account £140.

◆

Bromsgrove School of Art.—The annua meeting of the friends of this school of art was held on Monday evening. Mr. G. W. Gibson hon. secretary, read the report for the years 1868-69-70, which states that the working o the school for the three years has been satisfactory. The total number receiving instruction in drawing, in and through the agency of the school, had been 7,650, including an average of 150 taught in the National School. Nine received grade prizes, and one third grade prize had been awarded to students by the Science and Ar Department, and 27 students passed and obtained certificates. The amount of aid afforded to the school by the Department had been £55 8s. 8d. including £10 given in consequence of Mr. E. J Simms, a student of the school, having obtained a master's certificate. The committee tendered their thanks to Mr. Simms for the services he had rendered to the school. The total receipt had been £279 18s., including £193 2s. 3d received as fees, and there was a balance due to the treasurer of £7 6s. An exhibition o the works executed during the past year by th students preceded this meeting.

Building Intelligence.

CHURCHES AND CHAPELS.

Bristol.—The corner stone of a new synagogue for the Jewish Congregation at Bristol was laid on Wednesday week. The exterior of the building is intended to be as plain as possible—dressed Pennant stone, with freestone facings. The vestibule will be the only part of the front which will have any pretensions to architectural decoration. The dimensions of the interior will be :—Length, 62ft.; breadth, 46ft.; height, 25ft. There will be a gallery round three sides of the interior. The ceiling will be flat, with moulded panels, and the roof will be of Roman tiles. The cost of the building will be about £3,000 ; purchase of the site and the fittings of the interior will bring the cost up to about £5,000. The architect is Mr. Fripp; the masons, &c., Messrs. Beavan & Sons ; the carpenter, Mr. R. W. Bryant.

Leigh.—The church bells at Leigh, near Southend, have lately been repaired by Messrs. Warner & Co., at a cost of £250 for new bell, re-casting, and re-hanging. The belfry has also undergone some alterations, which were executed by Messrs. Thorp & Kemp, builders, Leigh.

Melton Mowbray.—The first stone of the new Wesleyan Chapel and Schools was laid last week, with some ceremony, by J. Budgett, Esq., of London, who was presented by the trustees with a handsome silver trowel upon the occasion. The plans have been prepared by Mr. R. W. Johnson, architect, of Melton Mowbray, and comprise a large schoolroom and class-rooms on the basement, the rooms being 11ft. high, and well lighted and ventilated. The chapel has side aisles and transepts, and large galleries on three sides. There is an organ recess at back of pulpit, and at back of chapel are vestries and choir rooms. The exterior will be of brick, with stone dressings ; and two western towers contain staircases, galleries, and schoolrooms. The chapel has an open high-pitched roof. The fittings generally will be in red deal, varnished ; moulded bricks will be used on the exterior. The buildings will be heated by hot air. There was a large amount of old materials available on the site. The contract was taken by Messrs. Winkles & Kellett, of Leicester, for £2,400.

Odstock.—The ancient parish church of Odstock, Wilts, has just been re-opened, after restoration from plans by Mr. Fowler, architect, of Louth, Lincolnshire. The church is mainly Early English in character, and consists of nave, chancel, and tower at the west end. The chancel has been rebuilt, the three-light east window having been preserved ; and an old Norman doorway, formerly blocked up, has been opened out and placed in its original position. The open seats in the nave are of stained deal, and the fittings of the chancel, together with the reading desk and lectern, are of oak.

Omagh.—The memorial stone of the Church of S. Columb, Omagh, now in course of erection, was laid on Saturday by the Duke of Abercorn. The church will afford accommodation for upwards of 600 persons, at a cost of about £5,400. The principal dimensions of the building are as follows :—Total length from east to west, 94ft. ; and from north to south in transepts, 88ft. ; width of nave 36ft. ; of transepts, 35ft. Height from floor to apex of nave roof, 52ft. ; size of south-west porch, 13ft. by 12ft. The style is Gothic of the thirteenth century, the details throughout being of a plain and massive character. The works are being carried out in accordance with the designs of the architect, J. E. Rogers, Esq., F.R.I.A.I., 179, Great Brunswick-street, Dublin, under the superintendence of William Hunter, Esq., the contractor being Mr. John Collen, of Portadown.

Salisbury Diocesan Church Building Association.—At the last quarterly meeting of this association there were only two applications for grants to be considered. The first was from the vicar of Tisbury, for assistance towards the restoration of the parish church, a very spacious edifice in the Norman style, containing numerous monuments of the Arundels of Wardour. Among the works proposed were the substitution of a new roof in the place of the existing dilapidated one, the laying down a new floor, and the re-arrangement of the seats, by which an increase of 70 sittings will be obtained. The cost will be about £1,350. The committee made a grant of £40 in this case. The second application was made by the incumbent of Britford, near Salisbury. The parish church urgently needed restoration and repairs. It was proposed to re-roof the nave, to substitute new windows for those now in existence, to add an additional 10ft. to the tower, and to re-seat the church with oak sittings. It is intended to lay out £1,700 on the works, towards which the committee voted £60. Orders for payment of sums previously voted were made as follows :—Towards re-building West Lulworth Church, £140 ; and towards re-building the aisles and reseating Whiteparish Church, £60.

Sherrington.—At Sherrington, Buckinghamshire, Mr. G. E. Street has restored the parish church at a cost of £1,000. The church is a cross church, the tower being in the centre of the building. It has north and south aisles. The old church had high-backed pews, abundant whitewashing, and a platform at the west end, which marred the beauty of the west window. The whitewash has been removed, the high-backed pews have been replaced by chairs, the floor of the church presenting an open area, and the disfiguring of the platform has been removed. The church has a lofty open roof. The chancel shows the most marked feature of restoration. It has a new open roof of oak, and has also been newly tiled. The reredos is of alabaster, inlaid with black marble, and is adorned by a cross of polished granite. Messrs. Shakeshaft & King, of Newport-Pagnell, are the builders.

Silloth.—At Silloth, near Carlisle, a new church has been opened from designs by Messrs. Cory & Ferguson, of Carlisle. The mason and bricklayer's work was carried out by Mr. Graves, of Aspatria ; the carpenter and joiner's work by Mr. Thompson, of Silloth ; the plumber's work by Messrs. Thompson ; and the painter and glazier's work by Mr. Westray, of Carlisle. The amount expended on the present contracts has been a little under £3,000.

The Westminster Chapter-House. — Few persons would recognise in the new building adjoining Westminster Abbey, now fast approaching completion, the old Chapter-House, which a few years ago was fast falling into decay, and the state of which at the time was provocative of considerable discussion. Although, as far as possible, all the old stone has been used, the work is virtually a new building.

BUILDINGS.

Brentwood.—On Thursday week two additional wings which have been for some time in course of erection at the Shoreditch Industrial Schools, Brentwood, were opened by the Guardians. Each wing is 234ft. in length. At the east end is a large board-room. The front passage leads to the large dining-hall (also used as a chapel), 70ft. by 37ft., by 36ft. in height. The works have been carried out by Messrs. Hill, Keddell, & Waldram, of London, at a cost of £20,000, from plans by Mr. W. Lee, architect, of Gresham-buildings, Old Broad-street, Mr. Jeffries acting as clerk of the works. Accommodation is now provided for 600 pupils.

Kensington.—A new art pottery studio is in course of erection at Kensington for Messrs. Minton & Co., of Stoke-upon-Trent and London. It is intended here to educate some of the students of the South Kensington School of Art in practical China painting, and also to invite eminent artists to paint upon China and majolica. The contract has been taken by Messrs. Lucas Brothers, Great George-street, Westminster, and the architect is Mr. Gilbert R. Redgrave, of Kensington, London.

Melton Mowbbay.—The new cattle market, which has been more than twelve months in progress, has been opened for public use. It covers about two acres of ground, and is conveniently arranged for the comfort of buyers and sellers and stock. The beast and sheep pens are all of wood and cast ironwork, and are strong and substantial. The area occupied by sheep pens is covered with asphalte, the pens being surrounded by blue channel bricks, and the ironwork fastened with lead into Yorkshire kerbing bedded in concrete. The beast pens are all paved with Mountsorrel granite, and the roads and avenues are composed of granite covered with gravel, the whole being coated over the entire surface beneath gravel with gas-tar put on hot. The pig market occupies a shed the whole length of market on one side, and a corresponding shed is prepared near the beast pens for calves. A block of buildings in centre of market comprises a large settling room for the use of the public, at the back of which are closets and other conveniences, the whole being divided by a large manure pit from the public slaughter-house, which is fitted up with fasting pens and every convenience. The walls are lined with white glazed bricks, which have a cleanly appearance. A large wrought-iron cistern over these buildings supplies water at various points in the market. The market is abutting on two public roads, which are much used, and four large entrance gateways give access to the different departments, the piers being of Derbyshire stone, and the gates of wrought-iron. The drainage is on an extensive scale, and is carried into the street mains at each end. The market has been constructed under an Act of Parliament obtained by the Local Board. The contractors for roads, buildings, &c., were Messrs. Weaver & Son, of Melton Mowbray. The ironwork was taken by Messrs. Richards & Co., of Britannia Foundry, Leicester. The plans were prepared by, and the work has been carried out under the superintendence of Mr. R. W. Johnson, architect, of Melton Mowbray, the outlay being about £5,000, exclusive of site, which formed part of the Town estate, and was devoted to the purpose without purchase.

Re-opening of Crewe Hall.—Crewe Hall, a perfect and splendid specimen of Elizabethan architecture, was, as our readers may remember, burnt to the ground a few years ago. Under the auspices of Mr. E. M. Barry, R.A., it has now been completely rebuilt and restored, and on the 12th inst. Lord Crewe called togather a numerous company to celebrate its re-opening. Service was held in the beautiful chapel by the Archbishop of York, who preached the sermon, assisted by the Bishop of Chester. Many of the local clergy and a portion of the choir of Chester Cathedral were also present. After the service upwards of 60 guests sat down to a sumptuous luncheon in the great dining-hall. The toast of the day, "The Health of Lord Crewe and prosperity to Crewe Hall," was given by the Archbishop of York. Lord Houghton, in proposing "The Architect," spoke of the great beauty of Crewe Hall as now happily restored, and asked the company to do justice to the ability and skill of Mr. Barry, one of the first architects of the day, in securing whose services Lord Crewe had been very fortunate. Mr. Barry said that the pleasure he naturally took in his work had been enhanced by the confidence and kindness he had received from Lord Crewe. He knew too well that architects, especially when employed on public works, were often very differently treated.

Rochester.—On Thursday week the corner-stone of a new Corn Exchange was laid by the Mayor, who subsequently opened the Castle grounds, which had been acquired on a long lease from Lord Jersey, to be formed into a recreation-ground for the use of the citizens. The Corporation take charge of the Castle and grounds, and will bear the expense of maintaining them in order; but the cost of laying out the grounds—£2,000, or more—will be met by public subscription, a large sum having been already promised The new Corn Exchange, a large building, which will be very handsome in the interior, is being erected in the rear of the present Corn Exchange, a comparatively small and inconvenient structure, which will serve as an approach from the High-street to the new building. There is no opportunity for effective display on the exterior of the new building, from its situation ; but the great hall in the interior will be a very fine one, while in other parts of the building there will be a library and a variety of offices. It will cost £5,000 or more.

Walton-on-the-Hill.—The foundation-stone of a new National School was laid on Saturday last, by the rector of the parish. The new boys' school will be erected in close proximity to the present girls' and infants' schools, near the church, and is designed to group well with those buildings. The bell turret, rising to a height of 40ft., will be a conspicuous object as seen from the Aintree and Church roads. The new school buildings will be capable of accommodating 200 boys, and consist of a school-room 80ft. long, 20ft. wide, and 18ft. from floor to ceiling ; two class-rooms, each measuring 15ft. by 14ft., and fitted up with a gallery. There will be also a conveniently situated lavatory and cloak-room. The building committee have contracted with Mr. Henry Sharrock, of Rice-lane, Walton, who is to complete the works by the end of March next, and who will be assisted therein by Messrs. J. & R. Kelly, bricklayers; Mr. Roberts, mason; and Messrs. Ayles, slaters. The plans have been prepared, and the works will be superintended by Mr. Edward A. Heffer, architect, of South Castle-street, Liverpool.

NOTICE.

WITH the aid of the new postal arrangements, which came into operation on the 1st inst., the Building News will in future be supplied through the post at 15s. per annum, instead of 17s. 4d. as hitherto. The halfpenny postal card will also be found useful to those who have scraps of building information, tenders, intercommunication queries and replies, &c., to send.

TO CORRESPONDENTS.

To Our Readers.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

Letters relating to advertisements and the ordinary business of the Paper should be addressed to the EDITOR, 31, TAVISTOCK STREET, COVENT GARDEN, W.C.

Advertisements for the current week must reach the office not later than 5 p.m on Thursday.

Received.—N. & C., R. W. A., S. W. & Co., G. R. R., S. H., W. R. W., J. M., C. & H., S. & H., E. & R. W., A. H., J. C., E. T. H., J. H., T. T., O. W., E. & R., W. S.

Patrick Auld.—Please send description to accompany sketch of sculptured tombstones.

J. Langham.—Can't promise.

John Bull, Jun.—Perhaps the ornament and perspective class, at the Working Men's College, 45, Great Ormond-street, would suit you.

T. Rashley.—Next week.

◆

Correspondence.

ROYAL ARCHITECTURAL MUSEUM.

(*To the Editor of the* Building News.)

Sir,—At this moment, when the museum is re-opened after the usual vacation, I should wish to remind our subscribers of the convenience for study afforded to them, both daily from 10 to 4, and on the evenings of Tuesday, Thursday, and Saturday, from 7 to 9·30. The evening arrangements have been made to suit architectural pupils and art workmen, who find it impossible to attend during the day.

Those who may care for systematic teaching in the various branches of architectural art may carry out their wishes at a trifling expense by joining the classes now formed in one of the rooms of the Museum. Their membership exempts them from the entrance fee charged to non-subscribers. Applications should be made at once to the Hon. Sec. to the Architectural Art Class Committee, Lacy W. Ridge, Esq., 23, Bedford-row, W.C.

During the recess the collection has been partially re-arranged, and the upper gallery has been railed round, and access to it obtained by a permanent staircase. This gallery will now be occupied by a fine collection of casts from Amiens and other places, and, it is hoped, by a selection from the Royal Academy. The catalogue will then be proceeded with, and a copy sent to each member. From this architects will be able to point out to their pupils the particular objects they may wish them to study without themselves visiting the Museum, and the selection of casts of which copies are required, and for supplying which arrangements are now complete, will thus be facilitated.

In conclusion I would add that although many new subscribers have been enrolled since the removal of the Museum to its new quarters, the annual income is as yet insufficient for the proper maintenance of the institution. I should feel grateful for any names of new subscribers, or even of such as would be likely to join on being invited.

The interest on the mortgage debt, now reduced to £900 by £100 having been recently paid off, is a serious charge on the annual income of the Museum. The extinction of this debt within a limited period is called for by the mortgage deed, and on this account, as well as for the reason above given, an appeal for further contributions will shortly be made. Judging from the success which attended our former efforts we are hopeful as to the result.

On behalf of the Council,
Joseph Clarke, Hon. Sec.
Tufton-street, Dean's-yard,
Westminster, S.W., Oct., 1870.

OVERCROWDED STATE OF THE PROFESSION.

Sir,—Through your endeavour to give fair play in the discussion of the above subject, a correspondent, sheltering himself behind the anonymous, and quite possibly assumed, initials "G. T. J.," brings a grave charge against a large body of highly respectable and honourable professional men by stating that an architect to his knowledge in the W. C. district has seven pupils, and not one paid assistant. If this is true, why does not "G. T. J." come before us in his true name as a guarantee of the truth of an assertion, which at present we must look upon with suspicion? Possibly the knowledge that his solicitor, if he has one, would shortly be required may deter him. Meanwhile I would add that if "G. T. J.'s" architectural knowledge and skill equal his acquirements in grammatical composition his professional brethren have little to fear from any rivalry on his part.—I am, &c, B. H.

London, S.W., Oct. 13.

["B. H." finds fault with "G. T. J." for writing behind initials, and tumbles into a similar error himself.—Ed. B.N.]

◆

Intercommunication.

QUESTIONS.

[1997] PRICE OF CONCRETE.—Will you or any of your readers oblige by giving me the price per cube yard of concrete for foundation laid ready for the bricklayers. I gave 3s. 3d. per yard for ballast delivered. The proportions are 6 to 1 blue lias. I am sorry to trouble you, and should not do so unless my employer had not agreed to abide by the decision of your valuable journal. I have done 2,050 cube yards for him, and although I have shown him several estimates of completed jobs he is far from satisfied.—J. L. B.

[1998] LIABILITY OF SURVEYORS.—Are surveyors who take out the quantities of buildings answerable for the correctness of them? And, in case of error, who is legally liable to make good any deficiences?—B.

[1999] MEASURING TRACERY.—Can any reader inform me of the method among surveyors of measuring Gothic tracery windows, chamfered and otherwise? Are the joints measured, and is any allowance made for dowells? —P. R.

[2000] SCHOOLS OF ART.—Can any of your readers kindly supply me with the names of those schools which participate in the benefits of the "Free Libraries Act," by receiving a certain amount of the borough rate of 1d. in the pound? If schools of art are ever to be put upon a satisfactory footing financially, it is high time that a borough rate should in all cases be levied to supplement the Government grant. I know of only two schools which receive help from the borough rates, viz., Burslem and Cork. For want of similar help many schools are sadly off for material, and consequently do not do half as much good as they could do.—Provincial.

[2001] DAMP WALLS.—Is there any composition that can be applied externally to cure damp walls, say to white fire bricks, the composition to be perfectly colourless? I think such a material has been spoken of in your columns and applied to the Houses of Parliament as a preservative, formed of a silicate of some kind. Perhaps some of your readers may have heard of it.—Architectus.

[2002] PITCH PINE.—Will you please allow the following to be inserted in your "Intercommunication Column," that I may be privileged to receive the opinions of your readers relative to the best method of laying pitch pine floors? 1. Which is the best substance and width for the pitch pine board? 2. The thickness of the rough boarding? 3. If the rough boards are to be laid in the opposite direction to that at which it is intended to lay the pitch pine, or in the same direction? 4. Should the pitch pine be glued and nailed on both edges, or nailed and dovetailed, or laid upon paper or other material? 5. Should the joist under the above floors be pugged?—Anxious Inquirer.

[2003] ELLIPTICAL SCROLL.—I should feel obliged to any of the readers of the Building News who would inform me the method of describing an elliptical scroll or volute.—Frank Chessell.

REPLIES.

[1939] BATH BRICKS are made at Bridgewater, Somersetshire, by Brown and Co., also Colthurst, Simmons and Co. of that town.—Runcorn Red Tail.

[1992] SURVEYING.—Sloping or undulated surfaces should be measured as on a level line for growing crops; it being well-known that no more trees, corn, or other standing crops will grow upon the surface of a hill than upon a plane equal in area to its base; because the natural direction of all vegetation is perpendicular to the horizon. For labour, however, the case is different, and the measurement in this case should be calculated from lines measured on the surface, because the spade, plough, scythe, or sickle must pass over the *whole* of the surface.—T. H. R.

[1994] INTERNATIONAL EXHIBITION, 1871.—If "Ambition" will send a letter to Mr. Wright, Office of Exhibition, 1871, South Kensington Museum, South Kensington, stating the kind of exhibit proposed, he will be attended to in due time, and by applying there he can obtain a book respecting it with all information.—G. W. Fairbank, Albert-road, Dalston.

◆

LEGAL INTELLIGENCE.

District Surveyor's Fees.—At the Clerkenwell Police Court on the 6th inst., Mr. William Elfick, of 3, Fonthill-road, Seven Sisters-road, Holloway, was summoned by Mr. John Turner, of 8, Duerden Villas, Tollington Park, one of the district surveyors of Islington, to show cause why he should not pay the sum of £2 2s. 6d. for surveying the erection of a house, No. 4, Fonthill-road, a building exceeding 600 square feet in area, and being three stories in height. The defendant was also summoned for a like sum for surveying the house No. 3, Fonthill-road. The defendant did not deny that he owed the money, but said he was quite unable to pay at present. Mr. Cooke, the magistrate, in the first case made out an order for the amount claimed to be paid, with 12s. costs, and in the second case, an order with 4s. costs.—Mr. Samuel Newson, of the Grange, Grange-road, Blackhill-lane, was likewise summoned by Mr. Turner, to show cause why he should not pay four several sums of £2 7s. 6. for surveying the erection of buildings exceeding 600 square feet in area, and being four stories in height, on the west side of S. Thomas's-road, Seven Sisters-road, and Mr. Cooke made an order for the amounts claimed to be paid, with 4s. costs in each case.—Mr. John Duffey, of 28, Andover-road, Hornsey-road, was also summoned by Mr. Turner, to show cause why he should not pay four several sums of £2 for surveying the erection of houses on the east side of Cottenham-road, and two sums of £2 for the erection of houses on the east side of Campbell-road, Seven Sisters road, and the case having been made out, Mr. Cooke made orders for the amounts claimed, with 4s. costs in each case.

Right of Way.—In the Bath County Court, recently, the case of Yeeles v. Grey and others was heard. This was an action by Captain Yeeles, of Bathford, to try the right of the defendants to pass over a piece of land belonging to him on the Bathford Common. Mr. Bartram, who appeared for the plaintiff, at once disclaimed any desire for damages against the defendants. He only wanted them to be taught that they must not go there. It seemed that some years ago a road was made across the common to convey stone from the quarries into the village. This had not been used for some years, and in the year 1869 the common was enclosed, and this road stopped up, and by an award, a portion of the land over which this road passed was allotted to the plaintiff. Notwithstanding this, the defendants still refused to go another way, but daily walked over the plaintiff's land; and this was the trespass complained of. The plaintiff was called to prove the fact of the enclosure, and the award and plan were also produced, showing his title. His keeper and the police constable were called to prove the trespass by the defendants and that they had been warned off repeatedly. Each of the defendants addressed the court that they had known the road for periods ranging from twenty to sixty years, and doubted the power of any Commissioner to stop it. His Honour (C. F. D. Caillard, Esq.), however, explained that if they had doubted this they should have gone before the Commissioner, and said so before the award was made. They must obey it, and he gave 24s. damages against them. The plaintiff begged that nothing might be charged to the defendants for his personal expenses.

◆

WATER SUPPLY AND SANITARY MATTERS.

Lambeth.—The quality of the water supplied by the Lambeth and Vauxhall Water Companies of late has been very bad, and repeated remonstrances have had little or no effect in securing greater purity. Dr. Vinen, the medical officer of health of S. George's, Southwark, calls attention to this in his last report to the S. George's vestry, and says:—"As the inhabitants of the metropolis have no choice, but must needs use such water as the companies think fit to give them, it is desirable that any power the vestry may possess for obtaining clear, transparent, and pure water should be brought to bear upon the companies for that purpose." We are glad to see that, in accordance with the suggestion thus thrown out, the matter has been referred to the Sanitary Committee of the vestry for inquiry and report.

Maldon.—The water company established seven years ago for the supply of this town has during that time been quite unable to meet the requirements of the inhabitants. It is now stated that the member for the borough, Mr. E. H. Bentall, has undertaken to provide new wells, works, and gear, sufficient to pump at least 50,000 gallons of water per day. The hon. member guarantees that this quantity shall be supplied daily, or he will not expect any remuneration for his outlay.

Outlet of the Fleet Sewer.—An engineering work o considerable perplexity and magnitude has (says the *Times* now been for some weeks in progress at the northern approach to Blackfriars Bridge, where the old Fleet, long since converted into a sewer, is carried to the Thames between other subterranean structures that cross either above or below it. The course of the covered brook or sewer was originally along the line of Bridge-street until, on approaching the river, it curved sharply to the west. This curved portion was removed when the new bridge was built, and a new channel was made from the Bridge-street line to find its point of exit beneath the abutment, where hinged flaps are placed to prevent the entrance of the rising tide. The main low level sewer was carried beneath the Fleet at a point nearly opposite the corner of the Royal Hotel; while the Metropolitan District Railway was carried over it a few yards nearer to the river, and the embankment subway above both. The railway diminished the depth of the Fleet channel at its point of crossing, and here the channel was increased in width, so that its discharging power might still remain unaffected. The object of the work now in progress is to render the increase in width gradual, by forming a sort of bell mouth that leads up to the railway crossing. A little to the north of the commencement of the bell the main channel is divided into four passages, two above and two below, each furnished with a tidal flap on the river side, and with a penstock on the north side. Further north again, a channel of communication has been made from the Fleet to the low level sewer, and is furnished with a penstock by which it can be entirely closed. The general object of the whole arrangement is that the sewage of the Fleet shall, as a rule, be discharged into the low level sewer at this point; but the penstock admits of its being entirely intercepted, and the low level sewer relieved to this extent, if any occasion for such relief should arise, either from temporary loss of the pumping power at the outfall or from any other cause. The bridge outlet will be kept in reserve for such extraordinary occasions, and will also be used for the escape of storm water. After heavy rains, either one or more of the four channels will be opened by lifting the proper penstocks, and the lighter portion of the descending flood will pass through this course to the river, while the heavier portion will still find its way to the low level sewer. It was during the progress of these works that the foundation stone of the old bridge was discovered.

STATUES, MEMORIALS, ETC.

Hull.—Mr. Sheriff Leatham has promised to present one of the marble statues that are to be placed in the niches in the porch of the Town-hall. The work has been entrusted to Mr. W. D. Keyworth, jun., of Hull and London. The statue will be one of Michael de la Pole, first Earl of Suffolk, and Lord Chancellor, son of Sir William de la Pole, whose statue already adorns the Town-hall.

Our Office Table.

New Market Hall, Whitchurch, Salop.—Six sets of plans have been submitted in competition for the above building, the authors being Mr. Josiah Barlow, Liverpool; Mr. J. R. Ford, Burslem; Mr. T. M. Lockwood, Chester; Mr. W. H. Spaull, Oswestry; Mr. D. Walker, and Mr. Jas. N. Crofts, both of Liverpool. The plans have been open to the inspection of the public, but the Local Board have not yet come to a decision. The building is to comprise a corn exchange, assembly room, or county court, with office for the Local Board, and a large market at back. The area of ground covered is about 2,000 yards, and the amount given by the Board is £5,000.

The Institution of Civil Engineers.—The list of members of this institution, corrected to the 1st inst., has just been issued. At that date there were 16 honorary members, 699 members, 994 associates, and 176 students, making a total of 1,885 of all classes. During the last three months the deaths have been recorded of three members — Messrs. John Braithwaite, Samuel Dobson, and William Alexander Provis, as well as five associates, viz., Sir John Thwaites, Bart., Lieut.-Col. Julian St. John Hovenden, R.E., and Messrs. William Gammon, George Houghton, and George Barnard Townsend, while one student has been permitted to withdraw. In the period referred to no addition has been made to the list, as the meetings have been suspended during the vacation.

The Albert Embankment.—On Monday by the direction of the Metropolitan Board of Works, the first step towards planting and decorating the Albert Embankment was put in hand, and the works will be pushed forward so as to bring them to a finish before the setting in of winter. Plane trees will be planted on the emankment at a distance of 30ft. Two large open spaces will be planted with shrubs, &c., and enclosed with handsome iron railings. One of the open spaces near S. Thomas's Hospital will not be enclosed, as it is intended to devote it to the purposes of a recreation ground for children. The cost of these inprovements has been estimated at the sum of £3,000. A new steamboat pier will be constructed on the site of the old Lambeth stairs, the contract for which has just been let to a responsible firm of contractors for the sum of £2,500.

Dulwich College.—A most interesting lecture was delivered by Dr. G. G. Zerffi, of the Science and Art Department, South Kensington, on the History of Art, at the above college on Wednesday, the 12th inst., at 7 o'clock p.m. It formed the first of a course to be delivered on successive Wednesdays at the same hour. The authorities at this college deserve great credit for introducing this important subject, the necessity for the study of which is at length being recognised.

Shoplifting Extraordinary.—In Northwich the buildings have a great predilection for sinking, and that after a fashion of their own. Two shops in the High-street have been subjects of general attention for some time past. They were erected six years ago, and soon began to give way to the influence referred to, so that the gable was two and a half feet out of plumb. Although the building has not changed much lately, it has become necessary to have its equilibrium restored. For this purpose stays have been braced across, and 17 screwjacks put in requisition, and with wedging on the ship-launching principle, with which the workmen are familiar, has been so far successful that during Thursday the lower end of the building has been raised two feet. No warping or cracking was perceptible in the framework of which the erection was composed, and if the further operations are equally successful the owner will have the pleasure of re-entering his shops in as comfortable a state as they were at first.

The Steel-Ribbon Sash-line.—Mr. G. Hookham, the patentee, claims for this invention that it is the only metal line based on a good mechanical principle. It is formed of a double band of watchspring steel covered with a binding of copper wire. The object of the wire covering is twofold. In the first place it renders the line suitable to be used with the ordinary pulley; and secondly, in conjunction with a waterproofing solution, applied to the steel underneath, it makes the line perfectly safe from rust. It also possesses a third advantage in its ornamental appearance, which is rendered permanent by the use of lacquer. The direct breaking strain of the line is very great, and it will be readily understood that whereas any other continuous metal line (as *e.g.*, the wire rope), being of a ductile nature, is injured every time it is bent over a small pulley, this line sustains no such injury, for an elastic material, such as tempered steel in thin bands, may be bent and straightened again any number of times without having its force of cohesion impaired. Another consequence of its elastic nature is great freedom and ease in working.

The Illinois and St. Louis Bridge.—The *Railway News* says this great bridge over the Mississippi, when completed, will deserve to rank among the wonders of railway enterprise. The bridge is to span the "great father of waters" at St. Louis by three enormous elliptic arches, each of 500ft., and on each shore there will be five lesser land arches. The superstructure is to be of steel and wrought-iron, and the piers of solid masonry. The effect of the whole design is said to be light and pleasing, while ample strength is ensured. The bridge is designed for the passage of ordinary carriage and foot traffic, as well as for the accommodation of a heavy railway traffic. Considerable progress has been made with the abutment on the St. Louis side of the river, which has already been brought seven or eight courses of masonry, or about 20ft., above water level. The piers, which will be fine specimens of masonry, will be 108ft. above the bed-rock. Their foundations, which are about 80ft. below high water-mark, cover spaces 65ft. by 80ft., the whole being of solid ashlar masonry, faced with granite brought from the State of Massachusetts. The eastern pier has been brought considerably above water level, and at its present height has an area of 80ft. by 35ft. The engineer is Mr. Eads, and the cost will be about 6,000,000 dols. The contractors have undertaken to have the bridge open for traffic by December 1st, 1871.

Old Blackfriars Bridge.—The honour of exhuming the foundation stone of the old bridge falls to the foreman to the contractor who has the works on the Embankment in hand. The difficulty of delving must have been great, as the stone was found 30ft. beneath the roadway in Bridge-street. In the stone was a cavity, in which a cylinder was placed containing a large number of current coins of the realm. The cylinder was stopped at the mouth with a handsome silver medal, which had evidently been given to the architect of the bridge, Mr. Robert Milne, by the S. Luke's Academy, at Rome, as a prize for his superior attainments in architecture. The medal, which maintained perfect sharpness in the engraving, was encased in lead, and covered down with cement. It was dated 1758, in Roman letters, and the leaden plate on the stone contained an inscription announcing that the foundation stone was laid by Sir Thomas Chitty (Lord Mayor, 1760), and that Robert Milne was the architect. The property has been handed over to the Corporation of the City of London.

Proposed Improvement at High-street, Wapping.—The Limehouse District Board of Works has been endeavouring to enlist the aid of the Metropolitan Board in carrying out an important improvement at Wapping, by widening and otherwise improving a portion of the High-street. The thoroughfare is absolutely impassable at times, owing to the heavy traffic brought upon it in connection with the foreign and coasting steam vessels, which load and unload at the various wharves lying between the south side of the street and the river. The estimated cost of the proposed works is about £12,000, of which sum the Central Board has refused to contribute more than one-half. The local authorities say that they are too poor to pay the other half, and if the Metropolitan Board persists in its resolution the improvement cannot be carried out at all. It is contended by the Limehouse Board of Works that the improvement would be beneficial to the whole metropolis, and that, therefore, the board ought to contribute a greater moiety of the cost.

Pre-empted Sites for Schools.—A matter of some importance to donors and others interested in the transfer of sites for schools has been brought under notice by the Earl of Coventry. The Earl complains that a site granted for a school may be sold and converted to some purpose of a very different description, greatly to the annoyance and injury of the grantor's adjacent property. The noble Earl has lately had an example on his estate at Powick. He gave a site for a school, and when new buildings were erected elsewhere he was required to pay what would have been the full value of the property if sold without restriction and all the costs. He declined to treat with the Charity Commissioners on their own terms; the property has been sold by auction without restriction, and the building may now be used for a beerhouse or any other purpose. Under these circumstances, the noble earl suggests that any land proprietor who makes a grant for a school site will be wise not to adopt the form of conveyance which the Council of Education prepared and printed, but to devise some mode of securing the right of pre-emption upon a reasonable valuation, in case the building to be erected on the land granted shall at any time cease to be used for school purposes.

Architects' Drawings.—It may not be uninstructive to note the opinion of the Transatlantic members of the profession on the questions of architects' drawings, which, at the present time, is troubling us at home. In reply to a question put to him by a reader, the editor of the *American Builder* replies as follows:—"We have always considered it a question of but little real consequence, other than tending to secure to the architect the building of additions, or repairs to the building, for it is most exceedingly rare that he is called upon to duplicate buildings except in houses for rent, and the drawings are of little value except to display before new clients as a certain sort of evidence of the work that has been entrusted to him. As a rule, most persons prefer that their drawings should remain on file in the architect's office, for the same reason that they allow their valuable papers, relating to estates, &c., to remain in the hands of their legal adviser." If the *American Builder's* opinion is at all generally shared by his readers, American architects seem to trouble themselves little about the question of ownership of drawings.

Art-Treasures in Paris.—The late superintendent of the Fine Arts in Paris, Count Nieuwerkerke, had, it was said, packed and sent out of the city the chief pictures belonging to the Italian, Flemish, and other schools, in order to insure them against being injured or seized by the enemy. This, however, was not the case; they were packed, but not sent away, and M. Jules Simon has arranged that not only these, but the valuable contents of the museum of Cluny, as well as the splendid collections of bronzes, medals, cameos, and other objects of virtù in the Bibliothèque—late Impériale, now Nationale—shall be stored in the safest places possible, and has also taken means to place what remains in these establishments as far as possible out of danger from fire.

Street Dust.—During the recent meeting of the British Association at Liverpool, Mr. C. R. C. Tichborne, F.G.S., read a paper in the Chemical Section on "Street Dust as a Ferment," and stated that his researches agreed with some of the ideas put forth by Professor Tyndall in his lecture at the Royal Institution, wherein he pointed out how the particles floating in the atmosphere might assist in spreading contagious diseases. Mr. Tichborne gave some analyses of various kinds of street dust, which were found to consist chiefly of stable manure and stone finely ground. Some dust taken from theatres and public buildings in Dublin was found to consist of from 30 to 50 per cent. of organic matter, and the inorganic matter was rich in iron. He found out that dust acts as a ferment in various solutions, and gave the particulars of experiments made by him to prove this point; the most interesting circumstance he made known was that the street dust which enters the throats and noses of dwellers in towns is half stable manure, a substance not conducive to health when taken internally.

Chips.

The opening conversazione of the Associated Arts Institute will take place in the rooms at 9, Conduit-street, on Saturday, the 29th inst., when the President, Mr. Richard Westmacott, R.A., F.R.S., will deliver an address.

The fortifications of Strasburg are being rapidly repaired. All the masons, carpenters, and labourers of the town are impressed at high wages.

The Post-office authorities have applied to the City Commissioners of Sewers for permission to lay a pneumatic tube from S. Martin's-le-Grand to Temple Bar, by way of S. Paul's Churchyard.

The salary of the surveyor of roads for the parish of S. Mary, Newington, has been increased from £180 to £200 per annum.

Mr. Daniel Baker, the artist by whom the heraldic paintings on Mr. Sheriff Jones's carriage were executed, is said to be the first deaf and dumb heraldic painter who has exercised his art in this country. He has painted six times for the sheriffs of London and Middlesex.

The building known as Whitecross-street Prison is to be sold by order of the Home Secretary.

The Poor Law Board has written to the Hackney Guardians, intimating that the maximum number of persons which the workhouse will be entitled to hold when the alterations are completed is 672, in accordance with the regulations of the cubic space commissioners.

Several of the east end parishes are now engaged in getting up memorials to the Metropolitan Board of Works, praying that body to defray part of the expense attendant on the proposed widening of Bakers-row, a thoroughfare leading from Whitechapel to Bethnal Green. It is urged by the memorialists that this would be a great metropolitan as well as local improvement.

Tilbury Fort Garrison Chapel has just been reopened, after restoration. The chapel was consecrated in the reign of Queen Elizabeth, but had latterly served as a billiard and reading room.

A new organ, by W. H. Prosser, of Vincent-square, Westminster, has just been opened in the parish church of Little Hallingbury, Essex.

Out of the £6,000 required for the restoration of Prittlewell parish church, £2,000 have been collected. Mr. Ewan Christian will be the architect employed.

The chancel of Frampton Church, Gloucester, having been rebuilt and extended by Mr. Woodyer, architect, and the burial ground enlarged, the bishop consecrated both on S. Michael's Day.

The parish church of Terrington, near Malton, having been restored by Mr. Christian, architect, at a cost of £2,200, was re-opened on the 3rd inst.

On the 13th of October the parish church of New Buckenham, Norfolk, was re-opened after restoration of the nave, the architect being Mr. W. Fawcett, M.A., of Cambridge.

A Tontine Company is being formed for the purchase of the Alexandra Palace and its 400 acres for £650,000. The shares are to be £1 each, to bear no interest beyond certain privileges. By way of enhancing the excitement, there are to be Art Union lotteries, in which the prizeholders are to forfeit their shares in the tontine.

Mr. J. Ruskin, M.A., Professor of Fine Art in the University of Oxford, will give a course of six lectures during the months of November and December in the museum of that place, "On the Elementary Principles of Sculpture."

The construction of a railway five German miles long, in the space of five weeks, an event perhaps unprecedented in the annals of engineering, has been successfully completed in the present campaign. This is the new line from Remilly to Pont-à-Mousson, by means of which Metz is avoided.

The "richest and most beautiful" synagogue in the world is in process of erection at Turin. It is a Greek temple in form, mounted on a little elevation; in colour, white and soft. Its ornamentation is at the same time elegant and grandiose, and it is crowned with a bizarre and massive tower, which, according to a contemporary, recalls visions of Nineveh and Thebes.

The interior of the Gaiety Theatre, already one of the handsomest in London, is about to be further embellished by the addition of a large number of mirrors.

Mr. J. Mozier, sculptor, of Rome, died at Faido, Switzerland, on the 4th inst.

Herr Saul, the landscape painter, has died at Baden-Baden.

A new art class has commenced at the Working Men's College, 45, Great Ormond-street.

The new buildings at South Kensington, for the permanent International Exhibitions, are nearly completed, and the rooms will shortly be thrown open for the inspection of intending contributors.

There is no truth in the account of two fatal accidents at the Royal Albert Hall, which appeared in the *Standard*, and has been copied into several of our contemporaries.

Prizes have been offered by Messrs. Cox and Company to the members of the Architectural Association for designs for church plate which they propose to execute for the forthcoming exhibition.

◆

Timber Trade Review.

Messrs. Churchill & Sim's sale on the 12th inst. consisted of

50,000	Spruce deals, &c.
100,000	Quebec pine deals, &c.
80,000	S. Petersburg and Archangel deals and battens.
48,000	Swedish deals and battens
17,000	Norway deals and battens
40,000	Finland deals and battens
200,000	Prepared flooring and match boards
1,600	Fresh Norway spars
360	Fathoms lathwood
800	Dantzig deck deals
300	Loads Picton birch timber
80	,, Quebec hickory timber
50	,, Quebec walnut timber
90	,, Quebec oak timber

&c., &c.

The prices obtained were as follows:—

	Per	£ s.	£ s.
Archangel 2nd yellow 3 × 11	Petg. std.	9 0	
Do. 3 × 9	do.	9 0	
Bjorneborg mixed yellow 3 × 9	do.	9 15	
Do. 3 & 2½ × 6	do.	7 5	
Do. 3rd. yellow 3 × 9	do.	8 15	
Do. 3 & 2½ × 6	do.	7 0	
Do. 2½ × 7	do.	6 5	to 6 10
Do. mixed white 3 × 11	do.	9 5	
Do, 3 × 9	do.	8 5	
Do. 3 & 2½ × 7	do.	7 5	
Do. 3rd white 3 × 11	do.	7 10	
Do. 3 × 9	do.	7 15	
Do. 3 & 2½ × 7	do.	6 15	
Christinestadt yellow 3 × 11	do.	9 0	
Do. 3 m 9	do.	9 0	
Calmar lathwood	cub. fthm.	£2 17s. 6d.	to £3 2s. 6d.
Christiana fresh spars 4 to 6in.	foot run	0 0 1⅛d.	
Do. 2 yellow 1½ × 6½	120 12ft.	7 5	
Do. 1st white 3 × 9	do.	14 15	
Dram 1st yellow 2½ m 6½	do.	7 0	
Do. 2nd do.	do.	7 0	
Do. 3rd do.	do.	6 0	
Do. 3rd white do.	do.	5 0	,, 5 15
Do. 4th do.	do.	4 15	,, 5 0
		s. d.	s. d.
Dantzig crown deck deals	40[illegible]	14 9	to 17 0
Do. crown brack	do.	12 6	,, 12 9
Do. 2nd crown brack	do.	12 9	
		£ s.	£ s.
Do. 1st middling timber	load	3 6	
Do. good middling	do.	2 18	
Fredrickstad 3rd yellow 2½ × 6½,	120 12ft.	6 5	
Do. 3rd white	do.	4 10	,, 5 0
Gothenburg 3rd yellow 3 & 4 × 11	Ptg. std.	8 15	
Do. 4th white 4 × 6	do.	5 10	
Gamla Carleby white 3 × 9	do.	7 5	
Do. 3 × 7	do.	6 5	,, 6 15
Do. 3 × 8	do.	6 15	
Do. 3 × 6	do.	6 10	
Do. fir timber	load	2 10	,, 2 11
Do. 1st yellow 3 × 11	Petg. std.	9 0	
Do. 3 × 9	do.	9 0	
Do. 2½ × 7	do.	8 10	
Do. 1 × 9	do.	8 0	
Do. 1 × 7	do.	8 0	
Gefle mixed yellow 3 × 11	do.	13 10	
Do. 3 × 9	do.	11 15	
Do. 4 × 9	do.	12 10	
Do. 3rd yellow 3 × 11	do.	9 15	
Do. 4 × 11	do.	9 15	
Do. 3 × 9	do.	9 10	
Do. 4th yellow 4 × 12	do.	9 0	
Holmstrand 3rd yellow 3 × 11	do.	9 0	
Do. 3 × 9	do.	9 0	
Do. 3 × 7	do.	7 15	
Do. white mixed 4 × 11	do.	7 5	
Do. 3 × 11	do.	8 5	
Do. 3 × 9	do.	8 0	
Hernosand mixed yellow 2½ × 9 & 11	do.	10 0	
Do. 2 × 9 & 11	do.	10 0	
Do. 2½ × 11	do.	9 0	
Do. 2½ × 10	do.	9 0	
Do. 2 × 11	do.	9 0	,, 9 5
Do. 2 × 9	do.	9 0	
Husum mixed yellow 4 × 9	do.	9 15	
Do. 3 × 11	do.	11 0	
Do. 3rd yellow 4 × 9	do.	7 15	
Kragero 3rd yellow 2½ × 7	do.	5 15	
Do. 2½ × 6½	do.	5 10	
Ljasvig yellow 2½ × 7	do.	7 15	
Do. 2½ × 6½	do.	6 10	,, 6 15
Do. 2 × 8	do.	8 10	
Do. 1½ × 8	do.	7 15	
Laurvig white (damaged)	do.	4 5	
Petersburg 1st yellow 3 × 9	do.	12 10	,, 12 15
Do. 3 × 7	do.	12 0	
Do. 2nd yellow 3 × 11	do.	10 5	
Do. 3 × 9	do.	9 0	
Do. 3 × 7	do.	8 10	
Do. 1st white 3 × 9	do.	9 5	,, 10 0
Do. 3 × 11	do.	9 10	,, 9 15
Do. 3 × 7	do.	8 5	
Do. 2½ × 7	do.	8 10	
Do. lathwood	cub. fthm.	4 0	,, 5 15
Picton birch 16in. and up.	load	2 15	,, 3 0
Quebec 1st bright Y. pine 12ft. 3 × 11	do.	17 15	,, 19 10
Do. 2nd bright	do.	13 10	
Do. 2nd floated	do.	12 0	
Do. 2nd dry floated	do.	12 5	,, 12 10
Do. 3rd bright	do.	8 15	,, 9 5
Quebec 3rd floated	load	£8 15	to £9 0
Do. 3rd dry floated	do.	9 0	,, 9 10
Do. hickory	load.	5 0	
Do. birch 16in. and up.	do.	£3 7s. 6d.	to £3 12s. 6d.
Do. oak	do.	6 5	,, 6 15
Do. walnut	foot cube	2s. 6d.	to 3s. 9d.
Do. red pine	load	£3 12s. 6d.	

◆

LATEST PRICES OF MATERIALS USED IN CONSTRUCTION.

Timber.

	£	s.	£	s.
Teak ... load	£12	10	13	10
Quebec, red pine	3	15	4	15
,, yellow pine	4	0	4	10
St. John N.B. yellow	0	0	0	0
Quebec Oak, white	6	0	6	10
,, birch	3	15	5	0
,, elm	4	5	5	5
Dantzic oak	4	10	6	15
,, fir	2	15	4	10
Memel fir	2	15	4	0
Riga	3	3	3	10
Swedish	2	13	3	0
Masts, Quebec red pine	4	0	5	5
,, yellow pine	4	0	5	5
Lathwood, Dantzic, fm	3	10	5	10
,, St. Petersburg	5	10	6	10
Deals, pr C., 12 ft. by 3 by 9 in.,				
Quebec, white spruce	12	0	17	0
St. John, white spruce	12	0	14	0
Yellow pine, per reduced C.				
Canada, 1st quality	18	0	19	10
2nd do.	12	15	13	10
Archangel, yellow	11	10	13	0
St. Petersburg, yel.	12	0	13	0

	£	s.	£	s.
Finland	£7	0	£8	0
Memel	0	0	0	0
Gothenburg, yellow	9	0	11	0
,, white	8	0	9	0
Gefle, yellow	10	10	12	10
Soderham	8	10	12	0
Christiania, per C., 12 ft. by 3 by 9 in. yellow	10	0	12	10
Flooring boards, per sq. of 1in., first yel	7	6	10	6
First white	7	0	9	6
Second qualities	6	0	7	0
PUMICE STONE pr ton	6	0	8	0
OILS, &c.				
Seal, pale ... per tun	36	0	0	0
Sperm body	80	0	0	0
Cod	37	10	38	0
Whale, Sth. Sea, pale	36	0	0	0
Olive, Gallipoli	48	0	48	10
Cocoanut, Cochin, ton	43	10	44	0
Palm, fine	40	0	0	0
Linseed	29	10	29	15
Rapeseed, Eng. pale	43	10	44	0
Cottonseed	29	0	34	10

Metals.

Lead —

	Per	£	s.	d.	£	s.	d.
Pig, Foreign	per ton	£17	10	0	£0	0	0
,, English W.B.	do	20	0	0	20	5	0
,, Lead Co.	do	19	15	0	20	0	0
,, Other brands	do	13	0	0	18	5	0
Sheet Milled	do	19	15	0	20	0	0
Shot, Patent	do	21	0	0	23	0	0
Red or Minium	do	19	15	0	20	10	0
Litharge, W.B.	do	0	0	0	0	0	0
White Dry	do	27	0	0	0	0	0
,, ground in oil	do	0	0	0	0	0	0

Copper:—

	Per	£	s.	d.	£	s.	d.
British—Cake and Ingot	per ton	£67	10	0	68	0	0
Best Selected	do	69	0	0	0	0	0
Sheet	do	71	0	0	73	0	0
Bottoms	do	75	0	0	0	0	0
Australian	do	68	10	0	71	0	0
Spanish Cake	do	0	0	0	0	0	0
Chili Bars, cash	do	61	0	0	62	0	0
,, Refined ingot	do	67	0	0	69	0	0
Yellow Metal	per lb	0	0	6½	0	0	7

Iron:—

	Per	£	s.	d.	£	s.	d.
Pig in Scotland, cash	per ton	£2	11	3	0	0	0
Welsh Bar, in London	do	7	2	6	7	10	0
,, Wales	do	6	10	0	6	12	6
Staffordshire	do	7	10	0	8	0	0
Rail, in Wales	do	7	0	0	7	10	0
Sheets, single in London	do	9	10	0	10	5	0
Hoops, first quality	do	8	10	0	9	5	0
Nail Rod	do	7	5	0	7	15	0
Swedish	do	9	10	0	9	15	0

◆

Trade News.

TENDERS.

Caterham.—For dwelling house and shop at Caterham, Surrey, for Mr. Woollett. Mr. Richard Martin, architect. Quantities supplied by Mr. Frederick Sparrow, 80, Richmond-road, N.:—

Scrivener	£633 0 0
Brown	575 6 4
Hunter	560 0 0
Jarrett	546 0 0
Ward	535 0 0

City.—For a warehouse to be built in Old Swan-lane, Upper Thames-street, City. Mr. H. R. Abraham, architect. Quantities by Mr. Pether:—

Myers & Sons	£1969
Browne & Robinson	1900
Holland & Hannen	1884
Merritt & Ashby	1797

Covent-garden.—For alterations and additions to warehouses at Bedford-street, Covent-garden, for Mr. Frederick Dangerfield. Mr. Alfred Cross, architect. Quanties supplied:—

Patman & Fotheringham	£3168
Colls & Sons	2978
Kelly Bros	2943
Newman & Mann	2926
Macey & Son	2885
Clemence	2697
Howard & Co.	2647

Covent-garden.—For alterations and additions to warehouses at Bedford-street, Covent-garden, for Mr. C. Hodgson. Mr. Alfred Cross, architect. Quantities supplied:—

Newman & Mann	£1235
Patman & Fotheringham	1228
Kelly Bros.	1147
Colls & Sons	1135
Howard	1036
Clemence	992

Covent-garden.—For additions at No. 38, Bedford-street, Covent-garden, for Mr. W. Berrall. Mr. Alfred Cross, architect:—

Thompson	£220 10
Clemence	213 0
Howard	212 0

Hackney.—For weighing machine for Hackney Workhouse:—

Hart & Co. (to weigh 6 tons)	£68 10 0
,, (to weigh 10 tons)	105 0 0
Pooley & Co.	93 0 0
Hill, Keddell & Waldram	93 10 0

THE BUILDING NEWS.

LONDON, FRIDAY, OCTOBER 28, 1870.

TECHNICAL EDUCATION.

A MOVEMENT is being organised to promote technical education for the working classes. It has been met with universal approval. Three hundred cities and towns of the United Kingdom have offered their adhesion to the plan proposed, although some slight variety of opinion has been expressed with regard to the means contemplated as leading to the end. Upon the whole, we think it best to let the controversy pass by. The National University for Technical and Industrial Training should be an institution by itself, with workmen and the teachers of workmen as its clients, or it had better not exist at all. To be frank with the originators of the project, we would advise them not to carry their goodwill among men too far; their scope, as indicated by their prospectus, should not include ethics, health, music, or the gymnasium. No: their credentials are not of these colours. These are not technical studies, in the strict and proper sense of the term; nor are languages, nor is magnetism, nor inorganic chemistry. In fact, the report of the National University nucleus conveys this meaning when it says, not entirely with truth, that "French and German engineers, clerks, mechanics, and art-workmen are, on account of their superior technical education, rapidly filling the higher situations, formerly occupied by Englishmen, all over the world." We would have our workmen look to this, without putting faith in it implicitly. For example, it is a mere boast of the French Commissioners when they assert "it is to France, rather than England, that foreigners go to seek engineers and shipwrights." It is not true. We know, perfectly well, that Spain and Italy come to us for hands whenever they want an engineer or a navigator. Still the competition increases, and the ground for rivalry is widening every day. It is distinctly declared by Chambers of Commerce, all the realm over, that many English trades are suffering through a want of practical culture; that other countries, through a more earnest attention to this, are gaining while we lose; and that an amount of science is now required, in alliance with industry, to which our artizans are not accustomed. Thus, a knowledge of chemistry is becoming indispensable in the textile, dyeing, machine-making, and leather manufactures. We want bright dyes. Can we supply ourselves with them? The Nottingham Chamber reports: "It is shown to this Chamber, by the most competent persons, that our workmen generally are utterly ignorant of the properties of the materials they are daily using, and of the best methods of using them." We think this charge too wholesale and sweeping. With many opportunities of comparison, we have not seen anywhere in Europe trophies of manufacture superior to those displayed by British artizans. Nevertheless, it is quite true that our workmen, left to their independent thought, do often imitate and are usually guided by tradition. They are not wanting in intelligence—this is a default wrongly imputed to them—but they lack originality. They are deficient also in the application of what information they possess to their daily handiwork. Observe this, which is of exceeding interest—"Even in black, large quantities of silk are sent, at very heavy expense, every year to the Continent to be dyed, and returned to Spitalfields, Coventry, Derby, Manchester, &c., to be woven—a fact most discreditable to the dyers of England. Immense quantities of spun silk are produced in England, sent to the Continent, made into ribbon-velvets, and returned to England in quantities almost beyond belief." Yet we export the machines; we supply material to the mills of Rheims; we send the weft and the warp to the works at Notts, in Belgium; we overload the "neutral markets" with our unfinished ingenuities. Then, what is the reason? Are we less inventive, or less capable than our neighbours? It is difficult to answer these questions. We are not behind Belgium in lace, or Holland in toys, or Austria in furniture, or France in pottery, or Italy in porcelain-painting, or Russia in the enrichment of malachite by sculpture, provided that we have the material; and yet an English mechanic tells us that we are "mere hewers of wood and drawers of water for other nations." *Poir cela,* as Rabelais would have said, *il y a une cause.* And it must be a cause worth seeking. Shall we "lose caste and trade together?" Shall we fulfil the prophecy of the late Sir Robert Peel, "if we are inferior in skill, knowledge, and experience, to the manufacturers of other countries, the increased facilities of intercourse will result in transferring the demand from us to others"? That is the present state of opinion, acknowledged and authorised. Now the object of all the inquiries, and of the University which it is proposed to establish, has been, in the first place, to ascertain the state of practical knowledge among foremen and workmen engaged in manufactures; the degree of scientific instruction possessed by the smaller manufacturers and managers; and the relation of industrial education to industrial progress. The last point is incomparably the most important. The Lord Mayor was perfectly in the right when he urged, in answer to the somewhat voluble deputation which wore his patience out at the Mansion House, that a good deal of machinery already exists, if it could only be applied. Thus we have the Training School at Chelsea; the Elementary Classes in Yorkshire, Lancashire, Worcestershire, and Scotland; the Department at South Kensington; but we have none in the north-eastern, eastern, west-midland, or southern counties of England. They are, in this sense, intellectually blank. Mr. Taylor, an active member of the City of London Livery, tells us that the City has immense funds at its disposal to cure it of the fault which disgraces other and inferior towns. When will these funds be applied? When will Dr. Mill, and Captain Mercier, and Alderman Gould, and Colonel Carter be enabled to tell us that the Livery Companies are, in this respect, fulfilling their duties? There are immense difficulties, of course, in the way. Let us make an extract—which, unfortunately, must be a long one—from the Parliamentary report, since it carries with it a significance that all working-men will appreciate. "In those not unfrequent cases where these persons (proprietors and managers of great industrial undertakings) have risen from the rank of artizans, the same exceptional gifts, including more especially those of unconquerable perseverance and energy, which have caused their elevation, have also enabled them generally to correct the deficiences of their early literary training. Any knowledge of scientific principles which they may have acquired is generally the result of solitary reading, and of observation of the facts with which their pursuits have made them familiar. More generally, however, the training of the capitalists, and of the managers of their class, has been that of the higher secondary schools, followed in rare, though in recent years less unfrequent instances, by a course of more or less scientific instruction in colleges, like the Royal School of Mines; the Royal College of Chemistry; University and King's Colleges, London; Owens College, Manchester; and the Laboratories of the Universities of Edinburgh and Glasgow. The scientific courses of Oxford have been too recently instituted, and have hitherto been devoted too entirely to pure science, to have had any appreciable influence on the scientific instruction of this class; besides which, a feeling exists, to which expression was given by Mr. Chance, the eminent manufacturer, of Smethwick, himself a man of great scientific attainments and a distinguished member of the University of Cambridge, that however suitable the universities may be, or become, for the training of professors of science of the higher class, the habits at present acquired there by the sons of wealthy men are not conducive to the successful prosecution of an industrial career." We have been at the pains of quoting this passage in full, because it sustains the whole argument of Dr. Mill. Then, in lower schools, the general fitness of the teachers is seriously to be doubted, while in France and Germany, for the most part, it is unquestionable. Not, however, to dwell upon controverted points, we may refer to the shortcomings in numerous classes, as alleged before Parliament, of a national industrial body—the English—who are assuredly capable of attaining in every department, French and German specialities not excepted, to the highest point. Leaving experimental physics, elementary chemistry, and botany for a time out of sight, though all are of the utmost importance and taught in every *Realschule* of Germany, we note the divisions in which great improvements, according to unbiassed and practical testimony, are called for. Allusion has been made to Nottingham. The Kendal manufacturers also affirm that their trade in textiles suffers constantly from the imperfect art and technical education of the operatives; and that they purchase French patterns, French dyes, and French coloured leathers. Foreign mechanics, in fact, go through a course, different from that which any apprenticeship could give them, of instruction in form, finish, and perfect adaptation to purpose. Now, saying not one word of this in disparagement of the English mechanic, and making full allowance for external causes, we go among the Birmingham works, and ask what countries are more or less displacing us in the Continental and even Colonial markets. This, be it remembered, is evidence from the hardware capital itself, drawn up by the Chamber of Commerce, and largely sanctioned at a working-class meeting. Germany, the United States, France, Belgium, Switzerland, and Austria; to enumerate the articles would be to reprint a catalogue, but we may instance one or two under each head, which meets us as a surprise: Germany, carpenters' tools; France, wire nails and locks; Belgium, wrought-iron nails and bits; the United States, axes, gimlets, and augurs; Austria, leather—nearly all the ornamental work in this material, which is sold in England, has been imported Now it is unnecessary to maintain that England in these respects, should beat all the world; but that she loses ground is a fact for which a practical reason must be sought. Staffordshire says that it has not deteriorated, because it employs imported artisans; the Batley Chamber that "the shawl trade has gone out of Leeds;" and, not tediously to multiply examples, so forth throughout the United Kingdom. In fairness, however, testimony of an opposite kind should be quoted. From Bradford the report was that the worsted trade of its neighbourhood was yet the largest in the world, and why? Because the population of that district has been trained for centuries in the combing, spinning, weaving, and dyeing of the long wool grown in that and some contiguous counties, and nowhere out of England. Here is a fact worth fifty theoretical arguments. Still, scientific competition is creeping in even there, and students from abroad are learning the invaluable mechanical arts of Bradford. But Rheims buys our Orleans wools to manufacture merinos; Orleans sends for our cotton to dye it; Saxony turns £5,000,000 worth of our worsted yarns every year into cloth; and this rather weakens one point urged often on behalf of ourselves. We have no native-grown silk. True, but Orleans has no cotton, and Saxony depends upon us for her wool. Then what are the remedies? Firstly, a full provision of teachers, thoroughly trained; plain courses of lessons and lectures in technical schools for the young; the addition of art to mechanical knowledge, and of theory to practice. We are tending that way, no doubt; the Science and Art Department, and the classes connected with the South Kensington Institution, are doing good work; but we want more of the polytechnic principle operating all over the country, and especially in the Midlands and the North. It would be impossible, within ordinary limits, to advance the whole of a demonstration which we have followed through three thousand pages of the parliamentary documents on the subject; but a few striking incidents of the system working abroad must be pointed out; the apprentice workshops of Lyons and Mulhouse—admirable institutions, to which Russians and Mexicans resort, but no English; and, in the result, a great manufacturer of our country remarks, "the prints of Mulhouse stand unrivalled in the world." Need it be added, so do the silks and velvets, in modern days, of Lyons? And yet, excepting a combing apparatus contrived by an Alsacian, there is hardly a manufacturing machine in any part of the Continent which is not more or less a copy from an English prototype. We work in the rough, and they build upon our basis—a truth teeming with encouragement. This, it should be said, by the way, is partly due to the custom prevailing in the more industrial regions of Europe, of mechanics devoting as much, or more, of their leisure time, to the discussion of mechanism than to debates on politics. Another thing worth considering is, the knowledge of distant lands and their wants. The small Swiss manufacturers understand precisely what they should make up for their customers among the Kaffirs and the Japanese. They study their markets intelligently. So the German engineers, with their locomotives for the East. Thus the technical education required for the industrious classes is more than primary and elementary; it must, at the very least, be carried up to the second stage, even with agricultural pupils, for, although not strictly mechanics, theirs is a pursuit demanding infinitely more teaching than they ever enjoy in England, and means of teaching in the breeding of animals, veterinary practice, forestry, garden and fruit culture, the rotation of crops, and hydraulics. In Italy are schools to fulfil all these objects. In Belgium, there are added the multiplication of seed and pomology; in Switzerland, topography and petography. Returning to the precise purpose of these remarks, we aspire to see the children of our working-classes crowding to "calico schools," like those of Mulhouse; turnery and joinery schools, like those of Lyons; basket and ivory schools, like those of Tuscany and the Tyrol. The Genoese and Milanese instruct the children of the poor early in the mystery of the silk manufacture, and convert their very factories into academies for the technical instruction of the young. The Swiss have classes for stone-cutting, the components of engines, the qualities and various uses of building materials, and watchmaking. The Belgians at Vervier, send forth annually hundreds of pupils versed in weaving, colouring, designing patterns, contrasts of flowers, and applications of the new, the mediæval, and the antique in ornament. In Hamburg we have seen boys of fifteen who could model, without reference, any kind of carriage; in Lubeck, young shipbuilders of amazing proficiency; at Munich, lads who comprehended all the primary principles of architecture; and at Nuremberg, even girls who could work up figures in sand which are sold at no inconsiderable prices through the toy-buying Continent. Without dwelling longer upon the details of a question which every day renders more interesting, aye, and more important, we will observe, finally, that far from denying the merits of home industry in all its branches, or disparaging the efforts already made to improve upon them, still we do perceive the best and the only permanently triumphant future for the English mechanic in technical education.

◆

LOAN PAINTINGS, SOUTH KENSINGTON MUSEUM.

THE Loan Department at South Kensington Museum has seldom abounded in real treasures as it does at the present moment. There are no less than three important collections of paintings in the various rooms, now exhibiting; two at the Museum and one in the old building. Of the former, Mr. Layard's, we can say no more at present than that it is well worth careful study, and contains principally good specimens of the early Italian schools. There is among the examples a lovely Luini, rivalling in sweetness of expression and naturalness of treatment the sweet "Madonna and Child" by Perugino in the National Gallery, which has been so terribly spoilt, almost, in fact, put out, by gilding in oil the original carved ebony frame, which added such a charm to this most charming picture! There are also two fine Gentile Bellinis; one a portrait of Mahomet, the other especially interesting for its magnificence of colour, and as being one of the first instances of clothing New Testament stories in Oriental costume. This room, by the way, contains a late bequest which to us seems to suggest a warning. We do not know the conditions of this particular gift, but we fear that careful—almost too careful in England—as the South Kensington authorities are, they are by no means so critical when they have nothing to pay. The Parsons bequest doubtless contains some fine things, and a few interesting ones, among them a good early transfer upon linen, possibly by the same artist as the fine specimen in the National Gallery by Van den Weeden, a very highly finished and beautiful painting of the "Strolling Musicians," after Lucas van Leyden's well-known engraving. This is one of the prettiest things we have seen for a long time. There are a very few good paintings besides, the most valuable being a grey sea-piece, by Turner, and a couple of modern German water-pieces. These are not in the Exhibition building. There are, however, many—the majority of the whole, in our opinion—by no means worthy of a place in an English public gallery—a small O'Connor, for example, worth a few pounds, and bad copies of Teniers, Cuyp, and others. We fancy we have heard that there was no fixed number to be chosen of necessity from this large collection; if so, the authorities would have been far wiser if they had confined their selection to the early pictures, and such examples—few, indeed, but choice—as the little Wooverman's "Chateau" and the Copley Fielding's "Moor," both excellent in their way.

In the other buildings we have a perfect treat. It needs no comment on our part when we say that the gems of the Marquis of Westminster's and Lord Elcho's collections, supplemented by single fine examples from other galleries, are now being exhibited. The Grosvenor pictures, of course, take the first place; among which are some of the masterpieces most celebrated in the country. There are very few doubtful pictures in this collection. We have no belief in the authenticity of the so-called Bellinis, but, with the exception of these and one or two others, we believe all are fine specimens of the masters to whom the paintings are ascribed. Facing you on the right side as you enter the room, your attention is riveted by the two masterpieces of the great English rivals of the last century in portraiture, Sir Joshua Reynolds's "Mrs. Siddons as the Tragic Muse," sombre in colour, deep in expression, and lovely beyond compare, as she always was; and Gainsborough's exquisite "Blue Boy." If one had not seen the two together, one would have imagined that their juxtaposition—the one so colourless, the other so full of colour—would have been fatal; but there they are, both standing out, holding their own, and never more happy than when brought together. In one point Gainsborough, as is usually the case, bears away the bell, inasmuch as his pigments stand so excellently, whereas Sir Joshua's are evidently a good deal gone, and it is to be feared that they may go still further. In studying these galleries one cannot help observing the usual inferiority of oil as a medium, not necessarily so, but ordinarily. That the faults of the medium are not irremediable are seen by such painters as Paris Bordone, Gainsborough, Teniers, and others; but Murillo, the Bassani, Sir Joshua Reynolds, sometimes Leonardo da Vinci, and, above all, the painters of the beginning of this century, show the dreadful dangers attendant upon this now universal medium, unless great care be taken and no tricks be indulged in. There are three Bassanos, only one ot which, belonging to Lord Elcho, gives any idea of what the artist intended, the black background having so sadly come up in both the others. This is quite as fatal as our hideous cracking, often due also to improper grounding. In comparing the "Blue Boy" with the "Mrs. Siddons" we can scarcely fail to observe that, with all his power, poetry, and art, Sir Joshua does not give so accurate and exact a portrait as Gainsborough. In the one case we have a magnificent picture, in the other, a likeness that we cannot doubt was exactly faithful to the original; and so, lovely as Sir Joshua's picture is—and doubtless it was far more beautiful when first painted—we doubt if it was ever nearly so good a likeness of Mrs. Siddons as the fine one in a blue dress and large flop-hat, by Gainsborough, in the National Gallery. Passing on the same side you come to a picture that at once invites the attention. The grace and elegance of Pietro di Cortona are irresistible, notwithstanding his unnatural colouring and imperfect drawing. His picture of "The Angel appearing to Hagar," though there is no perfect beauty in the features, and the drawing of the hands at least is far from correct, is perfectly fascinating. The Ishmael is exquisite. Much of his charm is certainly due to his perfect *chiaroscuro*. Almost equally beautiful, though no more faultless, is his "Marriage of S. Catherine." On this side of the room there are two very fine pictures, not belonging to the Marquis of Westminster; one by Murillo, in his most pleasing style—a "Madonna and Child," both purely Spanish, and evidently portraits. This belongs to Messrs. Hancock & Son. The other is a remarkably fresh and genuine sketch by Rubens of "The Triumph of Faith," belonging to the Duchesse de Bauffremont. We do not wish to see a better example of the facility of his pencil and richness of colour. Above is a beautiful Both, in first-rate condition. The glow of the sunset is admirable, and so is the drawing of the bathers. We must not omit mentioning "The Annunciation," by Paul Veronese; in colour and drawing this is perfectly faultless, but with all its courtly air we miss the religious feeling of the highest school of Italian art. One of the most religious pictures is the marvellous "Holy Family," by A. Vander Werff. There was a very fine example of this master in Mrs. Hope's collection; but in our opinion this is far superior. All the light, or rather twilight, is centred in the infant Saviour, who has sweetly fallen asleep with a bunch of flowers in his hand; the blessed Virgin is gently laying him down. Everything—even his mother—is subordinated to the beautiful babe. The effect is quite magic. As the *ne plus ultra* of finish without hardness, and of perfectly soft natural flesh, this is without parallel. The fine Rembrandt's "Salutation" is also a very religious picture, much more so than many of his sacred subjects; some of which, as for example, Lord Derby's "Jacob's Lament for his son Joseph," are not very far removed from the ridiculous, powerful though they always are.

There are several very fine Rembrandts; for perfect finish and beauty of subject nothing can surpass the small portrait of a young man in armour. It is rarely indeed that so perfect and pleasing a specimen of this master is to be seen. His portraits also of Nicholas Berghem and his wife are beyond all praise.

A rather uncommon sea-piece by Gainsborough shows the versatility of his talents and his universal success in all he undertook. The fresh breeze can positively be felt. Of small cabinet pictures there are several well worth careful study. Those which pleased us best were Domenichino's very sweet "St. Agnes," a very lovely Albano, and Julio Romano's "St. Luke painting Madonna and her Son." By Rubens there is also the noted painting of "Ixion embracing the idolon of Juno," while the real Juno, in true, almost too true, flesh and blood, is gliding away. This a very skilfully-managed picture, very characteristic of the artist's great powers.

Before leaving the sacred pictures we must not omit to notice a delightful one by Biscaino, very rich in colour and full of character without being too conventional; the shadows seem too dark, but this is probably owing to the ground having come up. There is also a capital example of Garofalo, "The Holy Family," the Virgin adoring her infant Son, who lies asleep on her dress.

If we had space we might enlarge on almost every picture in this gallery. We must now shortly notice the Dutch School. There are three fine examples of David Teniers the Younger; one of surpassing excellence—the view of his chateau, with the portrait of himself and his wife talking to his old gardener, with a marvellous little dog at their side. Any one who carefully examines this splendid work cannot fail to observe the astonishing power of touch in this master, how crisp and beautiful are his masterly strokes! No one has ever been able to do so much, if perhaps we except our own Turner, with a single stroke. Not so important or interesting, but little inferior in other respects, are the two interiors. The peasant's dinner, or rather "Grace before Meat," is admirable for finish, but unnaturally set, and so not so pleasing as the "Boors Carousing." The character expressed in the faces of the man lighting his pipe and the one waiting for the light when he has finished is simply astonishing.

Perhaps one of the rarest, as in our opinion it is one of the truest and most valuable, in the whole of this charming collection, is the Paul Potter; we do not say this on account of the known rarity of this master. For so small a painting it is marvellous. The cattle are not so beautiful as ours, the sheep are simply horrible, the country flat and uninteresting; and yet this small picture impresses one more than most. The absolute truth to nature, the evident power of the artist, surpass anything of the same kind. The dazzling flood of light that illuminates the landscape fully accounts for the raised fan of the burgher's wife, who would fain shield her eyes from its glare. You can see the very wet upon the noses of the cattle, but most surprising is the exquisite distant landscape. The amazing amount of detail, with great breadth at the same time, is beyond all praise. It is as charming a picture of this artist as one often sees, and fully justifies the very high prices realised by his good works.

We now turn to Lord Elcho's Collection, which is almost exclusively Italian, and contains some fine early examples. The earliest, an "Annunciation," of the fourteenth or early fifteenth century, is only fair, but when we come to the Cinque-Cento period the collection is rich in fine works. Foremost is a most devotional painting, by Alessandro Botticelli, of "The Blessed Virgin and Child." Nothing could surpass the rapturous devotion of the mother and the repose of her son; the colouring is rather low, possibly has faded to some extent, otherwise the picture is in a very pristine state. There is another specimen by the same master—a circular "Holy Family," full of feeling, the character of each being distinctly brought out—the faith of S. Mary, the watching perplexity of S. Joseph. This is a very interesting figure; the picture has suffered a good deal.

We must leave to a future opportunity a notice of other paintings worth mention, and of several recent additions to the Fine Art Department and the Loan Collection.

◆

ASHPITS AND DUSTBINS.

BEFORE launching ourselves into our subject we lay down this proposition. Every house to which a dustbin is attached, or which is provided with an ashpit or cesspool instead of a water-closet, should have an entrance at the rear. In other words, it should not be necessary to carry their contents when they require to be emptied through the house and out at the front door. Viewing this in the most favourable light—that is, in those instances in which the conveyance of sewage by water-carriage prevails, as in the metropolis—the question is not divested of its disagreeable and offensive features. Although the actual transit of "excreta" through the house does not take place, yet there is quite a sufficient quantity of refuse and putrescible matter stored up in even the best-kept dustbin to render its removal in this manner highly objectionable on sanitary grounds, and a constant source of annoyance to the inmates. The reason is obvious. The enormous and unwarrantable prices demanded for the merest scrap of land in and about London compel the builder to adopt one of two courses. He must either dispense with the bit of ground that would be required to form a side or back entrance, or, if he includes it in his lease, he must add the rent of it to that of the house, and thereby possibly increase the difficulty of letting it. While the majority of tenants prefer having a "little bit of ground" annexed to a house, yet very few are inclined to pay anything for it. They regard it as a very desirable appendage to a residence, but have a vague idea that it belongs gratis, as it were, to the house. Whatever may be the opinion respecting the ultimate disposal and value of sewage as a fertilising medium, after being removed from the vicinity of habitations either in a solid or liquid condition, it will be universally conceded that the water-carriage system possesses the merits of cleanliness, facility, and despatch in a superior degree to that of any other method. The whole arrangement is more in consonance with English tastes and habits than any other, and it certainly appears to be well adapted to the requirements of a large city. Another most important point in connection with the substitution of this principle of drainage and sewerage for the old privy or ashpit system, is that in every instance in which it has been carried out a marked improvement has taken place in the general health and sanitary condition of the locality. It is questionable whether the ash and dustpit method could afford equally satisfactory sanitary results with the very best and most careful management. There are, it must be acknowledged, very few towns out of the many in which this system prevails in which it is managed properly, or, in fact, in which justice is done to it. Unfortunately, the ashpit plan is peculiarly liable to be neglected, abused, and mismanaged. Every one is aware that the common dustbin is frequently crowded to the brim with refuse that has no right to be there. A great portion of its contents consists of putrified vegetable matter that should at one time have been utilised instead of thrown away. If the utilisation of ashes, cinders, and other "waste" substances were properly understood, and the principles of domestic economy thoroughly put into practice, the dustbin would not require to be emptied more than once a year, and perhaps not so often. "Throw it away" is one of the most extravagant and pernicious phrases ever uttered.

Many of our readers no doubt remember that the people of Manchester opposed with great vehemence and determination the attempted introduction of the water-carriage system into their cotton metropolis. The authorities maintained that even if it were applicable to that part of the city and suburbs which was inhabited by a superior class of tenants, it was altogether unsuitable to those portions which were resorted to by the working classes, the indigent, and the criminal. It was feared that the introduction of closets liberally supplied with water would lead to an enormous waste of that indispensable and sometimes not over abundant fluid, and that regarding both methods in the light of nuisances, the wet or liquid would be greater than the dry or solid one. Let us now examine the question a little in detail. When the latter principle is adopted the ashes are mixed up in the pit with the excreta, and the whole carted away at the proper intervals. It may be urged that in the cases in which the wet system is in vogue it does not do away with the necessity of a dustbin. In the majority of instances it certainly does not, but it does not follow that it might not. We know of cases where the dustbin is actually a superfluous provision, and the dustmen never come inside the house. This may appear somewhat hard of belief, but it is not a difficult operation to accomplish. In the first place, there is no waste committed in the "cuisine," no odds and ends of good food thrown away; and in the second a cinder-sifter is employed. These, in fact, are small portable dustbins. In the course of a fortnight they become full. When the dustman goes his rounds the box is handed to him by the servant, emptied into the cart, and returned. Any one, whether rich or poor, who has experienced the value of this arrangement in point of cleanliness and economy, would never think of using the regular dustbin. The cost of the little apparatus is very low, and some of a cheap kind could be manufactured for the poorer classes. It is possible, therefore, to dispense with the ordinary dustbin in houses which are provided with the wet system of sewerage. But even were it not, the removal of the contents of the dirtiest and worst-kept dustbin in either London or Manchester would not equal in offensiveness or noxiousness the emptying of a privy filled with combined refuse matter, ashes, and excrementitious deposits. If it be urged that the introduction of closets into the dwellings of the working classes is incompatible with the careless habits of the inhabitants, who, as a rule, bestow little or no attention upon sanitary subjects, the ashpit plan is open to still stronger objections on the same score. There are several precautions absolutely indispensable, which must be stringently adhered to in order to prevent that method eventuating not merely a failure, but a terrible nuisance as well. Whatever may be the system adopted, it is idle to imagine that it can ever be altogether self-acting, or that it should be incapable of being, not perhaps entirely frustrated, but at any rate obstructed by the wilful or accidental neglect of the population. But it is one thing to adopt such a system as cannot be converted into a nuisance, by any neglect or malicious intention, and another to employ a method that is susceptible of such conversion.

The difficulty of bringing any plan for the removal of the sewage and refuse matter of a large town into effectual operation is in proportion to the amount of care and attention which must be bestowed upon it by those who benefit by its advantages. Should this require any great share of exertion on their part, it is hopeless to expect that the plan will succeed. People are so averse to trouble in any shape, that many, who are thoroughly alive to the paramount importance of paying strict attention to sanitary matters, continually imperil their own safety and that of others by their neglect and thoughtlessness. What, then, is likely to ensue, when the practical efficiency of the whole system depends upon the attention of those who neither know nor care a single jot about health or cleanliness? Referring to Manchester, as the city where the principle of ashpits has been brought to the greatest perfection, and the dry method adopted by the corporation in preference to the wet or London method, we find that for some time past the civic authorities have been strenuously engaged in attempting to abolish the old arrangement of privies, ashpits, and dustbins. The task they set before them to carry out was beset with numerous obstacles. The destruction of one class of these domestic necessaries entailed the construction of others upon the new plan. So far as any newly-built dwellings were concerned, the difficulty was diminished, but not altogether removed. In this instance there would, of course, be nothing to destroy. All that would be required would be to build the houses in accordance with the views of the local authorities, but with that invincible obstinacy that always opposes itself to anything in the shape of progress and amelioration, numerous builders and owners of property refused to comply with the prescribed conditions. It should be mentioned, as illustrative of the practical worthlessness of all our sanitary regulations and provisions, that the opposition against the abolition of the old and introduction of the new system was enabled to hold the promoters of the latter in defiance for nearly a year. The corporate authorities had unquestionable legal right to act as they did, and yet by dint of the quibbles and ruses of their opponents, they were unable for a long time to effect the removal of a number of most offensive and noxious privies and ashpits, which had been certified by their inspector of nuisances as prejudicial to the health of this adjoining neighbourhood. This is one of the fundamental errors in our sanitary jurisprudence. While apparently it provides for the execution of the law, it virtually leaves all the responsibility, uncertainty, and expense upon the shoulders of those who have to enforce it. One of the requisites indispensable to the proper management of the dry method is that the ashes should be placed daily in the ashpit, so that all ammoniacal gases, and whatever other effluvia of an injurious character may be present, should be at once absorbed and deodorised. It is needless to remark that any inattention to this detail would lead to the escape of the gases, the dissemination of their poisonous qualities in the air, and to a return to the ancien régime, which the authorities have been at so much trouble and expense to abolish. It is not to be denied but that with due care and diligence the ashpit system may be adopted without fear of creating any nuisance during the time its contents are accumulating, but grave doubts must be entertained whether it be possible to cart away those contents without creating a temporary nuisance. Those who have encountered the "night-carts" in large towns like Manchester can only have one opinion on the matter. Although in the present day of scientific progress, in which it may be truly said of everything that can be included under the terms, that "the end justifies the means," we are not particularly squeamish, yet it must be acknowledged that the wet system, or the transport of sewage by water carriage, does possess the merit of dispensing with all manual labour of so offensive and disgusting a character. While admitting that there are instances in which the dry method may prove of more advantage than the other, we, nevertheless consider that there is no absolute necessity for any house, where the principles of domestic economy are thoroughly understood, and the water carriage system is in use, to be provided with either a dustbin or an ashpit.

◆

SPANISH JEWELRY AT THE SOUTH KENSINGTON MUSEUM.

AN interesting collection of jewelry has recently been acquired by the South Kensington Museum, from the treasury of the Virgen del Pilar, at Zaragoza. The objects are 32 in number, and are at present exhibited in the end gallery of the south court. It seems strange in an English museum to find a collection of votive offerings to the Virgin: had they hailed from callous Italy, or from war-distracted France, it had been another matter; but coming as they do from the ancient capital of Aragon, the most Catholic city of Catholic Spain, "the very Ephesus of Spanish Mariolatry," we are, indeed, astonished. Zaragoza, as our readers will remember, has two cathedrals; the one, according to Murray, an ancient severe church raised to the Saviour, entitled La Seo; the other a modern theatrical temple, dedicated to the heaven-descended Virgen del Pilar, enshrining the alabaster pillar brought by angels to Santiago. Mr. Street, in his "Gothic Architecture in Spain," says of this latter building, "the exterior promises so little gratification in the interior, that I never even made the attempt to penetrate into it." Notwithstanding the uninviting character of the architecture, it would seem that in the Sagrario of the miracle-working Virgin much had been accumulated that was worthy of a visit, and that the superstitious reverence of her votaries, though insufficient to complete her shrine, had heaped upon her altar substantial testimonies of their gratitude and devotion. To complete the cathedral, it was recently decided to sell the more valuable of these treasures, and thus we account for the presence of the jewels from Zaragoza at South Kensington. Knowing thus much of their history we find, as might be expected, that they are for the most part devotional in character. For while the humble Aragonese peasant recorded his gratitude to the Virgin for a marvellous cure by hanging a wax model of the afflicted part in her temple, the wealthy noble caused her image to be cunningly wrought in gold and enamel, and formed into an ornament for the figure carved in black wood which now takes her place on the sacred pillar. And we find her breast ornaments and pendant ornaments contributed by nobles and kings, who vied in the costliness and splendour of their offerings. With the exception of some rather insignificant filigree work, the whole of these jewels are valuable, both as examples of delicate workmanship and of graceful design. The two trays or baskets, Nos. 327, 328, are scarcely better than the Maltese work of the present day, but they serve to show how the traditional ornament derived from Africa has lingered, unchanging and unchanged, since the Moors overran Southern Europe. No. 331, a child's bauble, as the label informs us, is set down as Dutch work, and indeed, in spite of the collection being described as of Spanish origin, many of the best jewels are of Italian or French workmanship. Perhaps the most interesting and valuable of these jewels is the breast ornament, No. 325, set with emeralds, and with green translucent enamels matching the emeralds in colour. The value and beauty of nearly all of these precious stones, however, is marred by the manner in which they are cut; the system employed being that known as table cutting, a plan formerly universally adopted, and in which the gems were polished so as to present a flat surface to the spectator, faceted only round the edges. This gives to the most precious materials the appearance of glass, and destroys the sparkle and brilliancy which is obtained by the modern plan of cutting. Moreover, stones which have been cut in this most wasteful way can only be recut into facets at a great loss in size and value. No. 319, a bouquet of flowers of enammelled gold set with rose diamonds, and tied with a blue enamelled knot set with brilliants, deserves special notice, on account of the richness of the colour and the beauty of the transparent enamel in green, ruby tint and blue. This art of imitating flowers in jewels and enamel was formerly in much greater request than now-a-days; and we wish that goldsmiths would turn their attention to such lovely forms rather than torture gold and enamel into the distorted shapes they at present affect. We are at a loss to comprehend the meaning of representing dogs and a parrot as offerings to the Virgin. Thus 324 and 326 are pendant ornaments, representing chained dogs, of white enamel on gold; and 337 is a parrot, in green enamel, having a very fine hyacinth in the centre of its breast. In No. 335 this idea of setting a stone in the breast of a bird has been very skilfully applied, for the jewel represents a pelican tearing open her breast to feed her young, and the stone employed being a splendid carbuncle we have some reason for its position. Nos. 341, 342, and 343 are all representations of the Virgin, on her pillar, with and without attendant saints, in enamelled gold studded with pearls and brilliants. A cross formed of rock crystal, ornamented with enamel, No. 344, has six very fine amethysts set at the back. No. 322 is rather a singular ornament, made in imitation of a neckband or tie, having edges of gold lace set with jewels and enriched with turquoise enamels, the tie itself being of opaque white enamel. It was presented to the Treasury by the Marquis de Navareus, in 1679. We have here also a long series of pendant ornaments, or reliquaries, of rock crystal, enclosing delicate and minute subjects in enamel. Of these we may particularise 332, which was presented by Louis XIII. of France, and which contains groups of the Crucifixion and the Virgin and Child, the entire jewel being little larger than a watch. See also 333, 326, 338, and 346. More curious than beautiful is the fir-cone mounted as an essence bottle and set in enamel, and a hand holding a bunch of grapes, with leaves of green enamel, each grape being formed of a seed pearl. Perhaps the most curious of these objects is a ring-stand of filagree work, with subjects in enamel and sham jewels, and four small bottles of enamelled copper surrounded with silver filagree. We have only noted some of the more striking jewels in this collection, all of which deserve careful study and attention, not only for their beauty, but on account of their authenticity, for they have undoubtedly been preserved untouched since the day of their presentation to Our Lady of the Pillar. We added up roughly the prices attached to the labels in the case, and arrived at a sum total of close upon £900, a mere trifle as compared with the amount obtained for the entire collection; one day's sale of which alone realised upwards of £10,000. The celebrated diamond necklace given by Queen Maria Louise was sold for £1,050, and the Order of the Holy Spirit, set with fine brilliants, presented by Maria Theresa, wife of Don Louis of Bourbon, fetched £3,280.

◆

METROPOLITAN VANDALISM.

By a Provincial Architect.

THE façade of the General Post-Office in Saint Martin's-le-Grand, or "New Post-Office," as it is even now designated, has always been considered the best of the late Sir Robert Smirke's works, bad though that best may be in the eyes of European architects of any education in, or feeling for, Greek architecture. The average Londoner is proud of "the New Post-Office;" and, while showing his country cousin over the city, is sure to take him to view its long tall front of real cut stone, with its hexastyle Ionic portico, considered the best of the two largest porticoes in the metropolis. London is not by any means rich in specimens of "Greek" architecture, so called. She possesses the British Museum, the Euston Terminus, the "new" S. Pancras Church, the National Gallery (soon to disappear), University College in Gower-street, a mere fragment, and the Post-Office, S. Martin's-le-Grand. What are these, *as metropolitan edifices*, in comparison with other Greek works, *as provincial buildings* elsewhere—the Custom-house and S. George's Hall at Liverpool, the Fitzwilliam Museum at Cambridge, the Town-halls at Leeds, Birmingham, or Manchester, with many other country buildings of Hellenic, or of *quasi* Hellenic, architecture? Truly a very scanty array of Grecian "lions" to boast of.

London, then, can ill afford to lose her Greek buildings, or to have them defaced and shorn of the little Athenian character they do happen to possess. The few she can boast of have been raised at immense cost, and after an incredible amount of consideration, competition, and controversy. The erection of the Post-Office was itself the occasion of a very important architectural competition, ending, as is the case with too many of our town edifices, in the non-employment of the "successful" competitor, whose very name is by this time forgotten; and this large structure is, as we have just said, the *chef d' œuvre* of that unquestionably *successful* architect, Sir Robert Smirke.

Well, if any one will just now pass down Newgate-street, and glance across the vacant site on the western side of S. Martin's-le-Grand, he will obtain an uncommonly good view of the Post-Office, with its fine, well-relieved and, all things considered, grand portico of six gigantic columns. The eye will traverse these comely features, copied with such timid fidelity from the antique; pass from them to its entablature, with its proud inscription; and so upwards from the pediment into aërial space, amid which will be discerned a crowning composition of such intense ugliness and vulgarity as to make the spectator stand aghast with astonishment and disgust. Poor Sir Robert Smirke! Thou wert never the *magnus* Apollo of our adolescence; but never did we know thee so base and tasteless as to raise such an amorphous abomination as now unfortunately crowns thy grand work, the portico of the General Post-Office in S. Martin's-le-Grand! It is simply incredible that such a scandalous barbarism should have been perpetrated in the nineteenth century, and in the British metropolis. What on earth have those busybodies, the "British Architects," been about that they have missed this opportunity for a "deputation" by way of protest to prevent such a national scandal?

Lest the reader should assume we have been exaggerating an evil, let him, if he be an architect of any sort, conceive by way of acroterium, attic, or lantern, a mass of masonry surmounting the classic pediment, that can only be described as the bald gable end of a louvre, such as one would construct over the roof of a foundry, a brewery, or a railway engine-house. Our own impression on first beholding it was that it was merely a temporary construction for the accommodation of the Post-Office *employes*. But not so; on looking again we plainly saw it to be a permanent work of costly ashlar stone, shamelessly displaying its ordinarily pitched gable, flanked on each side with a lean-to, all three of these "architectural" features finished with a common square coping, such as one sees used in the North of England for the cover of a privy, or a back-yard wall! We do not at all believe that Mr. Sydney Smirke would think for an instant of placing such a truly "Gothic" thing above a Classic portico; and the question suggests itself, who really is the architectural genius who has designed, or rather contrived, this work of high art?

We may be told it was necessary to greatly increase the accommodation in the building; but that fact did not necessitate "the putting up"—we can use no better term—such an abortion as this. Any architect of the commonest taste or capacity would have provided all the required accommodation without disfiguring a costly public structure, as does this most wretched gable; absolutely destitute of cornice, string, blocking course, or architectural moulding of any description, all, we must allow, wisely eschewed by its contriver, for none of these features would suffice to convert this veritable sow's ear into a silk purse. It is, as it now stands and may be seen, a vile act of vandalism, disgraceful to English taste; and the sooner it is altered and licked into something like even moderate and decent harmony with Sir Robert Smirke's structure the better. The thing (or "thingumy," for it is a nondescript) does not appear to have been the work of an architect, and this, if the case, is discreditable to the Post-Office authorities If the public buildings of London require alteration and enlargement there is surely just at this time no such scarcity of professed architects as to justify our having them "done up" and defaced in this manner by any common house-builder; while to behold such bungling perpetrated—not with congenial place brick, or weather-boarding, but with costly and durable *ashlar stone*—is deplorable.

◆

ON THE HISTORICAL DEVELOPMENT OF ORNAMENTAL ART.

THE third lecture on this subject at the South Kensington Museum, on Tuesday afternoon last, was commenced by the lecturer's (Dr. G. G. Zerffi) referring to the ethnological peculiarities and distinctions of the various races of the human family. Coming to the Turanian, or square-headed races (which races may be further broadly classified as yellow-skinned), he said that these people have small oblique eyes, and a powerful broad mouth. The amount of brain with the Turanian is much greater than with the black-skinned races, and stands at 83½, whereas with the black races the figure is 75. The facial angle of the Turanian races ranges from about 85 to 87½, as is exemplified in the Mongol head. According to Dr. Marshall's division, the Mongol head has not such an oblique facial angle as that of the black or negro. The cheek bones are very prominent. Though a great advance on the black races, the Turanians have only a limited modicum of brain power or inventiveness, which the lecturer designated as the dynamic force in man. Man has two forces working within him, the static and the dynamic. The static force must be always the same, and this is the moral force. The principles of abstract morality are always the same in all races and epochs. The dynamic force is the intellect, which never rests. The Turanian races are highly developed statically, but the dynamical force within them is small. The Chinese, for instance, are very inventive up to a certain point, which they are long in attaining, and when they do attain it they remain stationary a long time. They invented gunpowder, and many of the most useful arts of highly civilized life had their origin with them; but in all cases they never advance beyond the germ, the first crude outline, and their inventions are all developed by the white race. The power of inventive development is peculiarly an endowment of the white races, who have oval-shaped heads, and the features symmetrically arranged. Both the forces working in mankind must be developed, or the result will be an imperfection. Wherever one or other of these forces has been neglected disaster has resulted, to individuals as well as to nations. Only by a perfect development of these forces can we accomplish really great things, and be really civilised beings. A mathematical definition of civilisation would run thus: Civilisation is a perfect balance of the two forces working in humanity, the moral and the intellectual. Looking at the Chinese, the Bhuddists, the Hebrews, the Mahometans, the Middle Ages, with Italy, Austria, and Russia as they existed but yesterday, it would be seen that everything with them was morality, obedience; the masses of the people had no will of their own, in other words they were highly developed statically, but dynamically they were neglected—the intellect was left uncultivated. Italy, Austria, and Russia have latterly emerged from the thraldom which was a barrier to their dynamical development, and with free institutions and liberty a grand future is before them; but where are the Chinese, the Buddhists, the Mahometans, and the Middle Ages? Their condition was illustrative of the evils of cultivating the statical to the exclusion of the dynamical force in human nature. Equally disastrous results have accrued and will accrue from the cultivation of the dynamic to the exclusion of the static force. Look at the Greeks, Romans, Carthaginians, and, in our own day, at the French. These nations, highly exalted and cultivated the intellect, while morals were considered to be of comparatively small importance. Looking at the English, Americans, Germans, Dutch, Scandinavians, and Anglo-Saxons generally, it would be found that they had done more for the progress of civilisation than other nations, and why? Because in them was found to exist a more perfect balance of the two forces working in humanity. The lecturer said he had dwelt so strongly on this point because a correct appreciation of it would give a very clear and distinct insight not only into the history of art, but into universal history. He then introduced the subject of pre-historic art. To appreciate the meaning of the term "pre-historic," he said, people must have an exact notion of time, which might be divided into time absolute and time relative. Time could be measured, then, either by dates or by facts or events. That man existed before history was, he adduced the evidence afforded by the remains of pottery and implements found in juxtaposition with the skeleton of the mammoth in a cave at Perigord, in France. An enlarged facsimile of a sketch of the mammoth on an ivory blade found in the Dordogne, in the Cave of Madelaine, was also exhibited. Such works as these must have lain for countless ages in the positions in which they were found—the condition of the strata evidenced that; therefore, before history was, man is found exerting his dynamic force in the production of such works, either for use or ornament. The epochs into which pre-historic time may be divided were enumerated as follows, by Dr. Zerffi:—The palæolithic, or *old stone* age; the neolithic, or *new stone* age, and the bronze age. These were dwelt upon at some length, as were also the evidences afforded by the Lake Dwellings. To the bronze age succeeded the iron age, or the era of history. Dr. Zerffi then referred to a diagram on which were inscribed the various elementary forms of pottery, as classified by Ziegler. In all these elementary forms the square or the circle is more or less present. The lecturer advised a thorough study of these forms, as a complete acquaintance with them and their combinations would be of far greater value to the designer than the mere copying of a jar or vase. After an enumeration of these elementary forms, the lecturer concluded by tracing the development of practical art in the materials used for pottery. First of all, and corresponding with the stone age, the clay was used unwashed, and full of extraneous matter. Secondly, and corresponding with the bronze age, the clay was used mixed with quartz or feldspar; thirdly, and corresponding with the iron age, the clay was used perfectly washed, and the pottery was elaborately ornamented, the ornamentation varying from geometrical figures to representations of plants, animals, and the human form. This pottery showed that, while the savage is capable of ornamenting beautifully in geometrical figures, as soon as he begins to depict the forms of animals or men he fails. Nevertheless, the beautiful sculpture of the Greeks was but a consummate development of the rude sculpturesque caricatures of barbarous ages.

◆

THE GREAT CLOCK AT STRASBURG.

THIS celebrated specimen of early clock-making was invented by Dasipodius and Wolkinstenius, two famous working mathematicians, in the year 1571. It stands within the Cathedral of Strasburg, and its details, which are exceedingly curious, are described at some length in the *Strasburg Chronicle*, whence the following particulars are abridged.

"Herein nine things are to be considered, whereof eight are in the wall; the ninth stands on the ground three feet from the wall. This is a great globe of the heavens, in which are three motions; one of the whole globe, which displays the whole heavens, and moves about from the east to the west in twenty-four hours; the second is of the sun, which runs through the signs once every year; the third is of the moon, which runs her course in twenty-eight days. So that in this globe you may view the motions of the whole heavens, the motions of the sun and moon, every minute of an hour, the rising and falling of every star, described! The instruments of these motions are hid in the body of a pelican, under the globe. The pole is lifted up to the elevation of Strasburg, and noted by a fair star made of brass; the zenith is declared by an angel placed in the midst of the meridian.

"The second to be observed, are two great circles one within another, one 8ft., the other 9ft. broad; the outmost moves from the north to the south once in a year, and hath two angels, one on the north side, which points every day in the week, the other on the south side, which points what day shall be one half year after. The inner circle moves from south to north, once in a hundred years, and hath many things described about it; as the year of the world, the year of our Lord, the circle of the sun, the processions of equinoctials, with the change of the celestial points, which things fall out by the motions which are called *trepidations;* the leap-year, the moveable feasts, and the dominical letter, or golden number, as it turns every year. There is an immoveable index, which encloses for every year all these things, the lower part of which index is joined to another round circle which is immoveable, wherein the province of Alsatia and the city of Strasburg are described. On both sides of the circles, on the wall, the eclipses of the sun and moon are told for many years, from 1573 to 1624.

"The third thing, is a weekly motion of the planets; on Sunday, the sun is drawn about in his chariot, as the day is spent; and before he be full in, you have Monday, that is the moon clear forth, and the horses of Mars' chariot putting forth their heads: and so for every day in the week.

"The fourth thing is a dial for the minutes of the hour. On the north side, a child, with a sceptre in his hand, tells every stroke of the clock; another child, on the south side, has an hour-glass in his hand, which runs just with the clock, and when the clock has struck, he turns his glass. Above the minute-dial is a dial for the hour; the outermost circumference contains the hours, but within it is a perfect astrolabe, whereby is shown the motion of every planet, his aspect, and in what sign, degree, and hour every one is in every hour of the day; the opposition likewise of the sun and moon, and the head and tail of the dragon.

"The sixth thing is a circle, wherein are the two signs of the moon's rising and falling; at two hollow places it is seen at what state she is, and her age is declared by an index.

"The seventh thing consists of four little bells, whereon the quarters of the hour are struck; at the first quarter comes forth a little boy, and strikes the first bell with an apple, and goes and stays at the fourth bell, until the next quarter; then comes a youth, and with a dart strikes two bells, and succeeds into the place of the child; at the third comes forth a man in arms, with a halbert in his hand, and strikes three bells, he succeeding into the place of the youth; at the fourth quarter, comes an old man with a staff, having a crook at the end, and he strikes the four bells, and stands at the fourth quarter, until the next quarter: immediately to strike the clock comes Death in a room above the others, for this is the eighth thing: and that at each quarter he comes forth, to catch each of those former ages away with him; but at a contrary side, comes forth a figure intended to represent our Saviour, which drives him in: but when the last quarter is heard, Death has leave to go to the bell, which he strikes with his bone, and stands at the bell, as the old man does at his quarter-bell, till the next quarter, and then they go in both together.

"The ninth and last thing in this right line is the tower at the top of the work, wherein is a chime, which goes at three, seven, and eleven o'clock, each time a different tune; and at Christmas, Easter, and Whitsuntide, a thanksgiving; and when this chime has done, the cock (which stands on the top of the tower, and the north side of the main work), having stretched out his neck, shakes his comb, claps his wings twice, and crows twice. The tower contains the curious machinery, the whole of which has long been out of repair."

◆

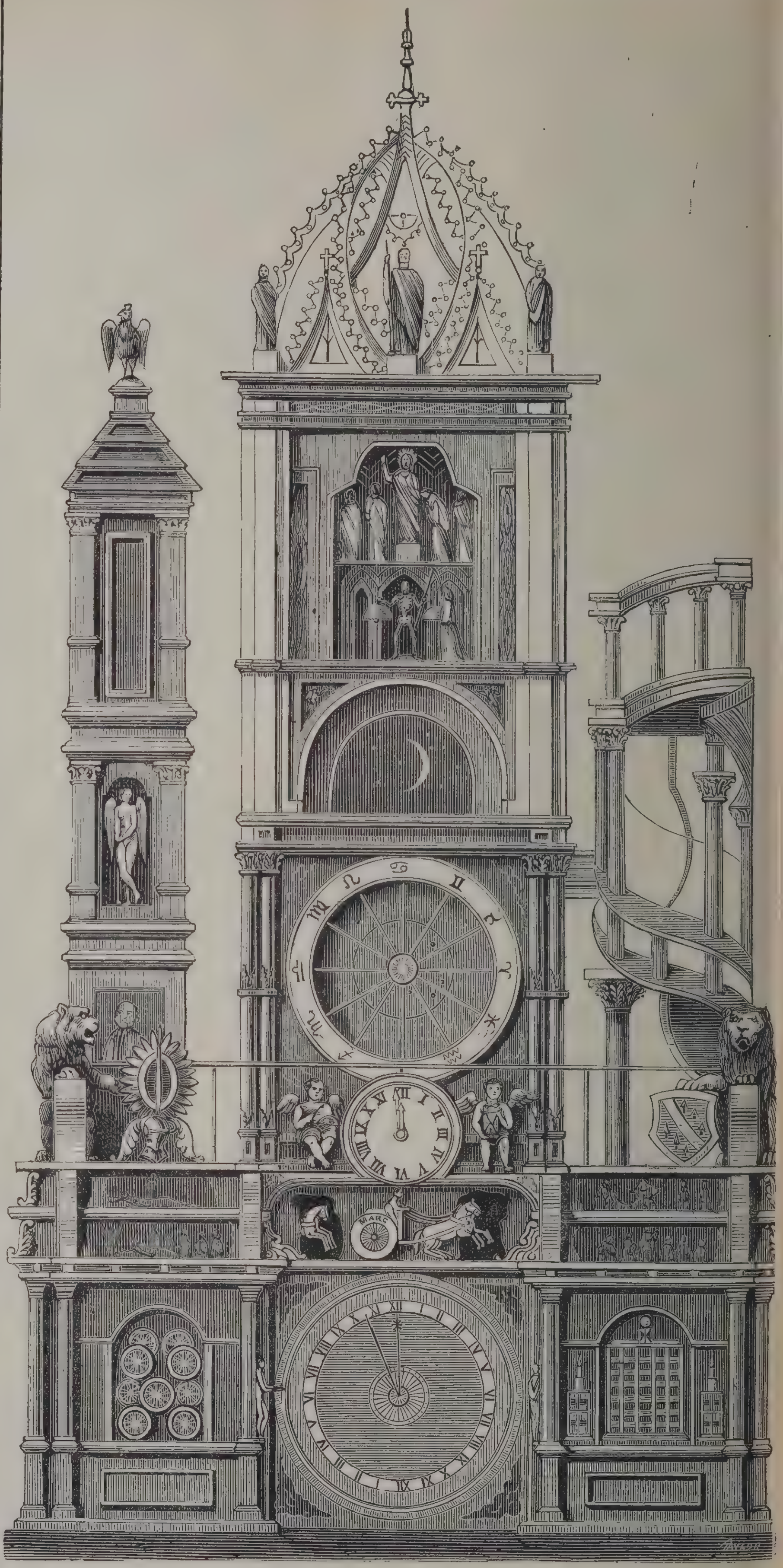
WINDOW FURNITURE—HOTEL DE VILLE, ROUEN.

(*From* Mr. Burges's *forthcoming work.*)

Two or three weeks since we called attention to an architectural work about to be published by Mr. William Burges. This week we give a specimen (moderately reduced by Whiteman and Bass) of the drawings. We might have selected a more elaborate illustration from the lithographs which Mr. Burges placed at our disposal, but the one now given is a fair specimen.

The subject of the illustration is the lower part of the window, Hotel de Ville, at Rouen. In the Middle Ages the lowest part of the windows was not glazed, but closed with shutters when raining or in cold weather. During the summer instead of the shutters a lattice was used, the grooves for which are shown in the drawing, but the lattices themselves (which are rarely found) are gone.

We may inform our readers that only 210 copies of the work have been printed. There are, we believe, 160 subscribers, and consequently only 50 copies to be subscribed for. The lithographed stones having been destroyed, no more copies can be produced. The work consists of 75 drawings, including 4 plates of costume. Among the subjects are eight drawings illustrating parts of Beauvais Cathedral, and six drawings illustrati the fleche of Amiens Cathedral. For price, & see advertisement.



THE GREAT CLOCK AT STRASBURG.

◆

The Ironmongers' Company have voted guineas to the fund towards the completion of Paul's Cathedral.

Window Furniture
Hotel de Ville, a Rouen

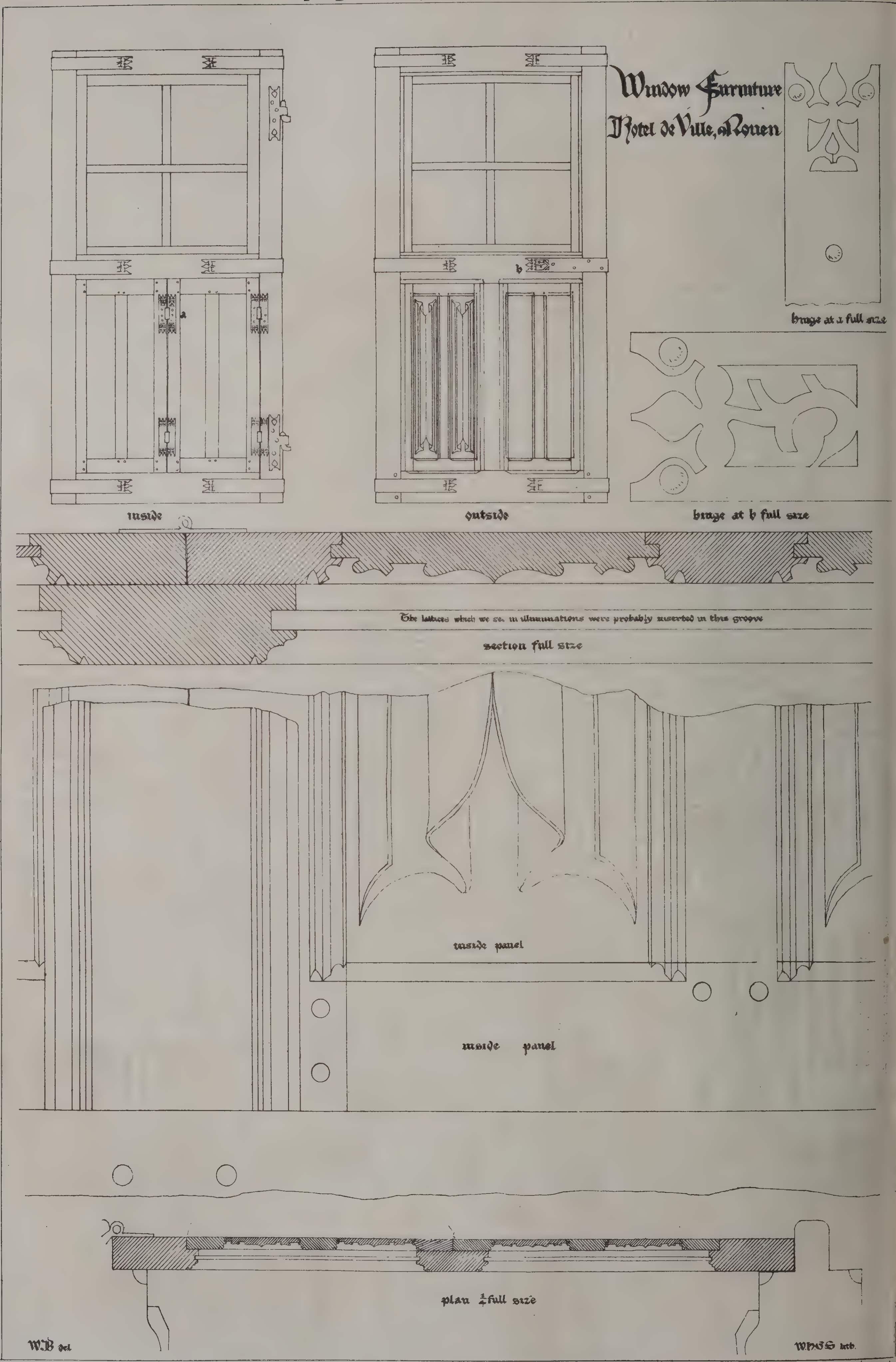


Photo-Lithographed by Whiteman & Bass, London.

W. Burges, de

The Building News, Octr 28th 1870.

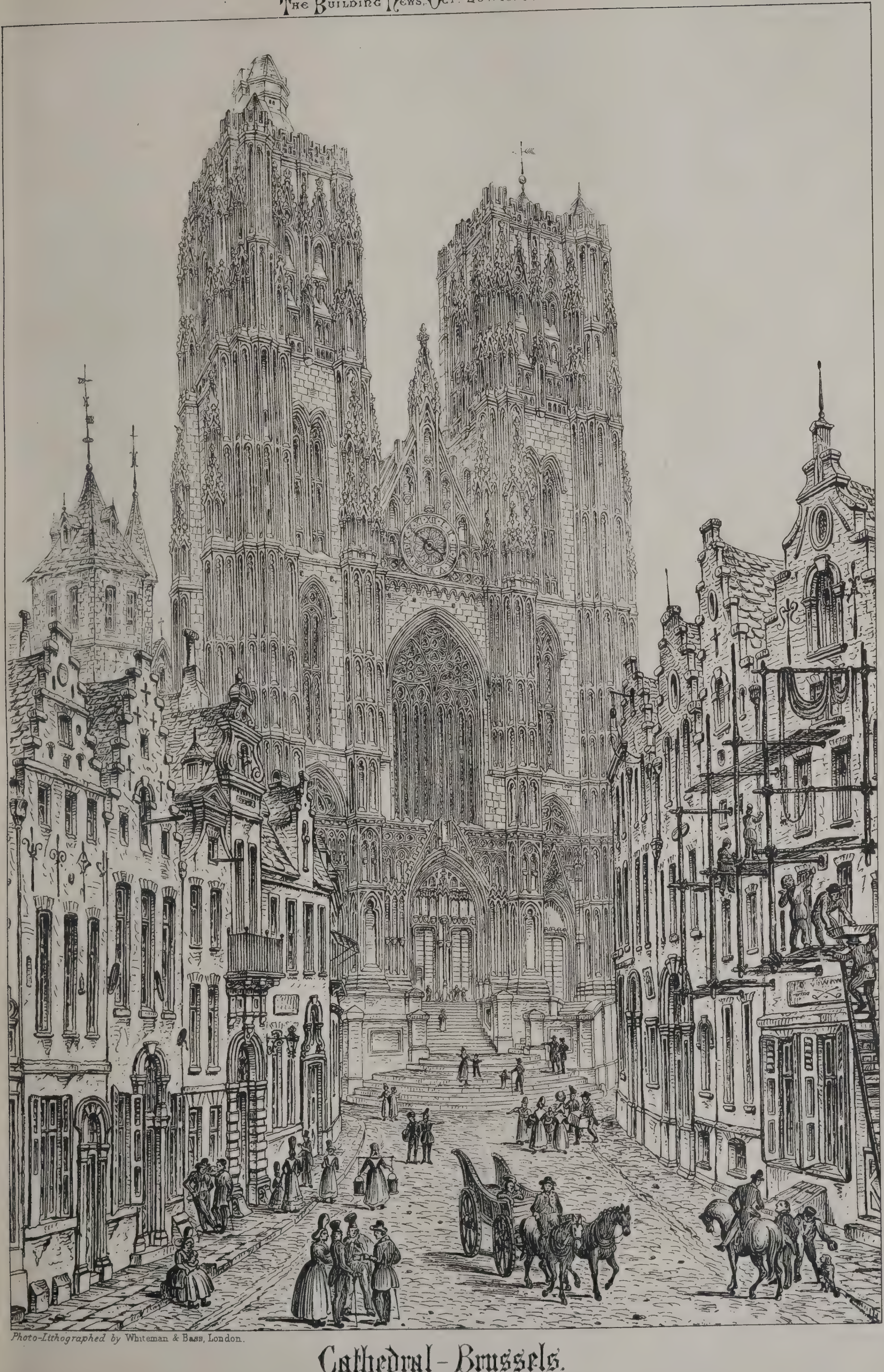


Photo-Lithographed by Whiteman & Bass, London.

Cathedral - Brussels.

Furniture & Decoration.

THE THEORY AND PRACTICE OF MODERN HOUSE PAINTING AND DECORATION.

BY "AN EXPERIENCED WORKMAN."

(*Continued from page* 282.)

DECORATIVE PROCESSES.

HAVING treated of the numerous preparatory processes used in bringing up oil and distemper grounds to a state of readiness for decoration, we have now to enter upon the various methods and manipulative processes used in the production and application of ornament (both flat and in relief) to surface decoration. In a former part of this series of articles we have expressed our opinion as to the propriety or suitability of the application of certain styles of ornament to house decoration; suffice it to say here, that the application of decorative ornament, in order to be successful, must be suitable, appropriate, and proportionate—suitable in fitness for the purposes it is used for; appropriate in having a purpose and a meaning in accordance with its use; and proportionate in size to the space it has to occupy. This will be at once evident if we contrast two or three instances. For example: ornament which would be suitable for the diapering or bordering of the chancel of a church would be out of place if used for the decoration of a dwelling room or a piece of furniture; in the former case, the ornament will require to be somewhat large and open in design, in order that it may be seen at a distance, and the colour also will require to be strong and positive in tone; this is all the more necessary, inasmuch as small or intricate ornament becomes confused at a short distance, and thus the effect is lost, while if proportionate in size it will be clearly defined although seen from the farthest seat of the church. On the other hand, in all work which is constantly near the eye, and which can be minutely examined at any time, the ornament will require to be carefully and correctly executed with firm, fine, and sharp outlines, lined or edged, and modified and subdued in colour. Of course, sharpness of outline must not be confined to small ornament, but is essential to both. Character, or style of ornament, is an essential point in its application; for the decoration of the panels of a door we require ornament which in size, in outline, in colour, and in distribution of parts shall be different and yet like the ornament we should use for the ceiling or walls of the same room—that is to say, the ornament used in a room, whatever its size or use may be, should all be in the same style, but requires to be in size, colour, and finish of different degrees. This may appear an unnecessary repetition of a self-evident fact, but everyday experience goes to prove the contrary; we have only to enter two-thirds of our public buildings, churches, chapels, concert and assembly rooms, and private dwelling-rooms, to see hundreds of instances of the misapplication of ornament and colour—a conglomeration of incongruous ornament out of taste, out of colour, and totally out of keeping the one with the other. There is a degree of mental blindness to what in themselves are plain or self-evident facts which is truly lamentable. Day after day men go on perpetrating gross blunders in these matters, which one would think only required a moment's thought in order to perceive and remedy. We therefore cannot too often urge the desirability, and, in fact, the necessity for (the young student especially) striving to avoid these errors, as being alike destructive of the true application of ornament and colour. It is an old saying, and a true one that we are taught by our failures; but we have often (especially in matters of taste) gained much knowledge and experience from other people's failures. It is well to know what to avoid; this knowledge is often of great value in decoration, as well as in other matters. Another valuable acquisition gained by experience is to know when we have done enough. Many otherwise successful works are spoiled from the want of this knowledge. "Let well alone" is a common proverb, but none the less true for all that. It is surprising the faculty we have for seeing the defects in other people's work. If we are not beyond improvement, we do not know but this perceptive power is an advantage, inasmuch as it shows us what to avoid. By studying the public works executed by some of our best decorative artists, we may acquire a better knowledge of the practical application of ornament and colour than we may get in any other way. We may, of course, and do acquire a theoretical knowledge of ornamental design and harmony of colour from books and lectures, and are better prepared when we do come to practice; but its application to large surfaces in practice is a very different matter, requiring much experience and close observation. Stencil-patterns play a very important part in the application of ornament to surface-decoration; their value and usefulness cannot be over-estimated. By this means ornament can be multiplied to any extent at a comparatively small cost, thus enabling us to adorn and beautify what, if it were to be done by the pencil, would simply be left undone on account of the enormous cost involved. Previously to the abolition of the duty upon paperhangings, stencilling was used as a substitute for, and imitation of, wall-papers. as many as six or seven colours being introduced by means of as many different stencil-plates. Many of these were of course in pattern facsimiles of the wall-papers of that day, not much to be admired as regards design or colouring, but greatly esteemed for all that. We have seen rooms admirably executed in this manner in distemper colours—quite equal to much of the paperhangings of the time; and it shows how great the progress has been in the manufacture of wall-paper when we consider that thirty years ago a workman could cover the walls of a room with a stencil-pattern of two or three colours at a much less cost than it could be covered with paper; but in these later days we can buy paper at 2d. and 2½d. for twelve yards, a reduction so large that no comparison can be really instituted between them—enabling us to paper a room at a tenth of the cost of stencilling in those old days. The workmen who were skilled in this kind of work were known by the not very artistic name of slap-dashers, the origin of which term we have not hitherto been able to make out, except it may be derived from the union of two very expressive words used in the North for quick action,—namely, "slap," a quick, impulsive blow with the open hand, and "dash," a sharp, quick, and broad stroke or dash made with a pen or brush. The word aptly describes the quick process as then used: a slap and a dash and the work was done. However, be that as it may, the art of stencilling has made a great stride since that day. The revival of decorative art in England may be dated from the Great Exhibition of 1851. The stimulus at that time given led to much improvement in all branches of the decorative trades or professions, and the enormous amount of *flat* ornament required by the necessities of modern decorative art has developed and fostered the designing of ornament expressly suited to this means or method of decoration. We say this means (*i.e.*, stencilling) advisedly, because all ornament is not adapted for execution by this method, inasmuch as although a certain class of ornament may be done by stencils in two or more colours, so as to appear as partly in relief by the effect of light and shade, still its essential feature and most useful purpose is the multiplication of flat ornament (*i.e.*, ornament in one or more colours, without light and shade or any attempt at the appearance of projection). The use of stencil-plates is of great antiquity. So early as 1440 stencil-plates were used to print the dots and figures upon playing cards,[*] and for various other purposes; and it has been of more or less importance ever since—its simplicity being a great inducement to its use. The artist has merely to furnish the stencil; the design once cut can be executed by workmen having no knowledge of drawing whatever. Any ordinary workman may do the stencilling under the supervision of the decorator, the actual operation requiring only ordinary care; and it is this fact which makes the process so valuable and so universal in its application.

Stencil-plates or sheets may be made of a great diversity of material. Ordinary drawing papers, linen paper—that is, paper with thin linen or calico fastened to one side of it in the course of its manufacture, which, of course, gives tenacity, and lessens its liability to break or tear; but it requires to be used with care, or the threads of the calico or linen get loose and cause rough edges—tin foil, thin sheet lead, thin sheet brass or copper, are very often used; much use is also made of the wide drawing or cartridge paper, which is manufactured 4ft. 6in. and 5ft. wide, and of any length, and is well adapted for the purpose. A very tough and serviceable stencil-paper is made by uniting two or three sheets of the white lining paper by means of patent knotting. Two sheets are saturated with the patent knotting, and laid one upon the other, care being taken to press out all the air from between them. This will be best done if there is plenty of the knotting put between them, and they are put quickly together before the spirit has had time to evaporate, which it does very quickly, and the knotting dries, and the two will not unite. They should be placed upon a level or smooth table or board, and the air pressed out with the hand or a folded cloth; when this is dry and hard it will cut sharp and clean, and be very tough, which qualities are very necessary, and, in fact, indispensable, in a good stencil paper. This object may be attained in a great measure with all the ordinary drawing and cartridge papers by giving them one or two coats of the patent knotting before being used; which, besides making them tough and serviceable, enables us to use stencil plates of paper for water or distemper colours, the knotting causing these papers to be impervious to wet or damp. It also enables us to wash them, after being used, either with water or turpentine. The gum shellac, of which the patent knotting is made, being dissolved in wood naphtha, the turpentine has no affinity with it, and so may be used in washing the paint off the stencils. A good plan also is to give the paper we are about to use for this purpose a thin coat of knotting after the design is on and before it is cut, as it will cut much sharper, cleaner, and easier in consequence. Paper for this purpose should be chosen as firm, or rather as free from blemishes as possible, as there are often small hard specks in it, which in cutting are apt to catch the knife, and rip or tear.

(*To be continued.*)

---

[*] Tristan, in his "Commentaires Historiques," p. 657, engraves one which gives this inscription: "Dn. Constantio Aug. Semper Victori;" and Quintilian ("Instit. Orator.," lib. i., cap. i.), speaking of a mode of teaching the Roman youth to write on the waxen tablet, advises the use of a "copy in wood, in which the letters are well cut, that through such openings he may trace the characters with his style. He will not thus be liable to make slips, as otherwise he would upon the wax alone, for he will be confined by the boundaries of these letters, and neither will be able to deviate from his text." Procopius tells us that the Emperor Justin I. made use of a tablet of wood cut in this manner, through which he traced his signature in red ink. His contemporary, Theodoric, King of the Ostrogoths, had his monogram cut in a plate of gold for the same purpose; and Charlemagne is reported to have produced his monogram, as a sign-manual, by the same means, or else as an impressed stamp.

BRUSSELS CATHEDRAL.

THE Cathedral Church of S. Gudule, Brussels, forms the subject of one of our illustrations. It is cruciform, with two large towers at the west end. It was commenced in 1010. It contains sixteen chapels, and many works of art, and a fair quantity of ecclesiastical rubbish, arranged with little regard to order or taste. The remarkable pulpit, carved in oak and representing in bas-relief the expulsion of Adam and Eve from Paradise, is well known to English tourists. There is little to admire either in the proportions of the building or its details.

QUICK-DRYING INODOROUS PAINT.

TWO objections to the use of paint—its bad smell and the time it takes drying—are entirely obviated by the use of a patent composition which we have seen in use this week at the Museum of Building Appliances. "The Painter's Desideratum," as the composition is called, is mixed with white lead or any other pigment in place of oil, turpentine, or driers. The cupboard we saw painted at the museum received its first coat a few minutes before twelve. Within twenty minutes it was perfectly dry. The second coat was applied, and in another ten minutes that too was quite dry enough to bear touching with impunity to the hand or dress. The very faint smell perceptible was rather agreeable than otherwise. The great saving in labour effected by the adoption of this paint abundantly compensates for the very slight extra cost of the composition, and if, as we are assured by numerous testimonials, its durability equals its other good qualities, its general adoption, especially for inside work, is certain.

ON ARTIFICIAL STONE AND VARIOUS KINDS OF SILICA.*

By The Rev. H. Highton, M.A.

SILICA is found in various forms more or less soluble. Some kinds can only be united with alkalies in the heat of a glass furnace; other kinds can be dissolved under a high pressure and after a considerable lapse of time by solutions of alkalies; other forms, again, to which the author particularly wished to call attention, can be dissolved under proper precautions even in the cold. Natural silica of this kind was exhibited both from Germany and England. By means of this soluble silica artificial stone can be formed harder than any natural stone except the very hard granites and primitive rocks. The process is as follows:—

A concrete is made with any good hydraulic cement. When this is dry it is steeped in an alkaline solution of silica, in which is placed a quantity of free silica. The following chemical process then takes place:—The lime in the concrete extracts the silica from the solution, leaving the alkali free, which immediately attacks the free silica and conveys it in its turn to the concrete. This process goes on continually till the lime in the concrete is saturated with silica. By this process, within a week the strength of the concrete is increased from 50 to 150 per cent., and by a longer continuation of the steeping the strength is still more increased.

As the alkali acts only as a carrier of the silica, it is used over and over again; and it is in this that the economy of the manufacture consists.

The following is the comparative resistance to a crushing force of several kinds of stone:—

	Per sq. inch. lb.
The Silicated Concrete or Patent Victoria Stone	6441
Aberdeen Granite	7770
Dartmoor Granite	6993
Peterhead Granite	6216
Yorkshire Landing	5851
Stafford Blue Brick	4032
Portland Stone	2426
Bath Stone	1244

The stone formed in this manner has been tried as a pavement in the busiest part of Cheapside, and in many other parts of London, and for steps, lintels, sills, &c., in many parts both of this kingdom and abroad, as well as in India.

The whole of the stone in the new warehouses, 27, S. Mary Axe, is made in this manner.

As a cheap strong stone, when manufactured on a large scale, it is likely to supersede natural stone, except where the latter is very cheap and abundant.

In localities, as on the Thames, where there are facilities for obtaining good hydraulic cement and hard broken stone, it can be manufactured at a much lower cost than Yorkshire or other stone can be procured.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

General Headings for Clauses of Contract.

[*Approved at a Meeting of Council held on the 1st of August.*]

"THE Council have had under consideration certain headings of clauses for contracts between builders and their employers, as proposed by the Builders' Society, and have referred them for examination to a committee. The Council, upon the report of this committee, submitted to the Builders' Society modifications, which they thought necessary to make in the headings suggested by the Builders' Society, so as to render them acceptable to the architect and his employer.

"The attention given by the Committee and Council has been limited to the clauses submitted to their consideration by the Builders' Society; but, of course, other clauses are necessary to establish fully all the relative responsibilities of the employer and the employed.

"At the same time it is to be observed that the Council cannot pretend to bind its members to the adoption of any headings of clauses of contract which the Council may think either reasonable or expedient; for in such a legal document the employer must rely wholly on the opinion of his architect and legal adviser, both as to specific heads and matters of the contract and as to the form in which they should be drawn, in order to give them the proper legal efficacy.

"The responsibilities of the contract lie between the employer and contractor alone; the architect being merely the adviser of the employer, and acting as equitable medium between the two. Any responsibilities which he may professionally have rest between him and his employer. Consequently all obligations in the contract lie between the contracting parties only.

"The absolute control of the execution of the work, in all its particulars, must rest with the architect, who is expected to exercise a just and fair judgment between the two parties; though a reference is but equitable, if desired, in questions as to the quantity, extent, or value of extras and omissions, alterations or additions, subject to any special provisions in the contract on this head as to written authority, periodical delivery of accounts, &c., &c.

"Thomas L. Donaldson, } Hon. Secs."
"John P. Seddon, }

General Headings for Clauses of Contract, as settled between the Council of the Royal Institute of British Architects and the Committee of the London Builders' Society:—

1. Contractor to provide everything necessary for works, as per drawings and specification, or to the true intent and meaning thereof; and if drawings and specification differ architect to decide which to be followed.

2. Contractor to conform to general acts, regulations, and bye-laws relating to buildings; to give notices thereby required to be given to local authorities, and pay fees payable thereunder.

3. Contractor to set out works, to rectify errors, provide appliances, and to produce vouchers proving materials to be as described, and genuine, when required. The contractor to provide plant, labour, materials, &c., required. All materials and workmanship to be the best of their several kinds. To leave all perfect and clean.

4. Contractor to keep on ground a competent foreman, and to be supplied with a complete copy of drawings and specification by the architect or measuring surveyor. Not to sublet without consent.

5. Architect to have at all times access to the works, which are to be entirely under his control. He may require contractor to dismiss any workman incompetent or misconducting himself, and thereupon the contractor is to do so.

6. Contractor not to deviate from drawings or specification, or execute extra works, unless required to comply with the aforesaid acts and regulations or bye-laws, or unless upon authority of architect, to be shown by written order, or by plan or drawing expressly given and signed, or initialed, as extra or variation, or by subsequent written approval signed or initialed. Vouchers for all such extras to be delivered to the architect or clerk of works weekly in case of day work. No day work to be admissable unless so ordered, or for work impossible to be measured.

7. Alterations in or additions to works not to vitiate contract, and if no price be agreed, the value thereof to be added to or deducted from contract, according to schedule of prices or fair measure and value.

8. Work and materials bought on ground to be considered property of employer when included in any paid certificate, and not to be removed without architect's consent; but employer not to be liable for loss or damage thereto.

9. Architect may require such materials to be removed as in his opinion are not according to specification, and others to be substituted; and, in case of delay, the employer may remove same and substitute others at contractor's cost.

10. Architect may require work in his opinion executed with improper materials or defective workmanship to be re-executed; and, in case of delay, may cause same to be done at contractor's cost.

11. Faults arising from improper or defective workmanship or materials within months after completion, to be made good by contractor; and, in case of default, employer may recover costs thereof from contractor.

12. Contractor to insure, in office to be approved, in joint names, in half amount of contract, until works covered in, and thenceforth in three-fourths until completion, and to produce policies and receipts for premium. Moneys received to be applied in rebuilding or reparation. In case of neglect, employer may insure, at contractor's cost.

13. Building to be under contractor's sole charge, who is to make good damage by fire, or from causes under his own control; and to hold employer harmless as to injuries to persons and structural damage to property.

14. Employer to have access to building, and may execute other works, for which contractor is to give reasonable facilities, so that his work be not impeded; contractor not to be responsible for damages to or occasioned by such other works.

15. Works (except painting and papering) to be completed in months after commencement, unless in case of inclement weather, causes not under the control of contractor, combination of workmen, strike, or lock-out affecting any building trade, in which case architect to extend time, and contractor to complete within such time as the architect shall consider reasonable and in writing appoint. In case of delay, employer to be entitled to £ per week as damages, if architect shall in writing certify that works could have been reasonably completed in the time appointed.

16. If contractor become bankrupt, compound with or make assignment for benefit of creditors, or suspend or delay the works (except on account of causes mentioned in clause 15, or on account of proceedings by parties interested in adjoining properties, or for want of proper instructions duly applied for), employer may require works to be proceeded with; and if requisitions be not complied with for days, may enter and complete works—the cost incurred to be repaid by contractor.

17. Contractor to be paid, on certificate of architect and at architect's discretion, during the progress of the works, as previously agreed, 80 per cent. of value of works executed, until balance of percentage equal 10 per cent. on contract sum, and thenceforth to be paid full value. When works completed or possession given up contractor to be paid moiety of balance of moneys payable to him (except £ for papering and painting), and the remainder months from completion of works or giving up possession. Provided always that no final or other certificate shall cover or relieve the contractor from liability as defined in clause 11, whether the same be noted at the time or subsequently to granting such certificate or order.

18. Certificate of architect or award of referee, showing amount payable to contractor, to be evidence of completion, without prejudice to liability of contractor to make good defects as aforesaid. The sum reserved for painting and papering to be paid to contractor on completion thereof.

1I. If employer make default for days in payment of any moneys due to contractor, or if works be delayed for months by proceedings of adjoining owners, contractor to be at liberty to suspend works, and require payment for works executed, materials wrought up, and loss on goods or materials purchased for the works, and not to be bound to complete contract.

---

* Abstract of a paper read before the British Association, Liverpool Meeting, Section B.

20. Arbitration Clause: — With regard to quantity or value of extras and omissions, or variations on the contract, and questions of delay, or the withholding of certificates, or the true intent and meaning of the drawings and specification as to cost. The arbitrator being an architect and a Fellow of the Royal Institute of British Architects, agreed to by the parties, or appointed by the President (for the time being) of the Royal Institute of British Architects. The arbitrator to award costs between employer and contractor.

Memorandum.—In cases where the quantities are provided, it is recommended that, unless a surveyor be mutually agreed upon by the architect and builder, two surveyors be employed to take off the quantities, one appointed by the architect, and the other by the builder, at a meeting convened for the purpose.

At a meeting of the Council of the Royal Institute of British Architects, held on Monday, the 1st August, 1870, it was resolved—"That in their general intention these headings appear to the Council to be equitable and such as may be recommended to the members of the Institute for adoption."

Thomas L. Donaldson, } Hon. Secs.
John P. Seddon, }
9, Conduit-street, Hanover-square, W.,
9th August, 1870.

◆

EXPERIMENTS UPON THE STRENGTH OF DIFFERENT SYSTEMS OF BRICK AND CEMENT FLOORS.*

M. GARCIN proposes to replace the brick work ordinarily employed between the iron beams of fire-proof floors by a system of voussoirs of plaster, forming by their union a resemblance to a course of freestone.

The voussoirs are pierced with regular openings to reduce their weight. Each course is formed of 5 voussoirs, with inclined sides, each having 4 tubular openings, except the keystone, which has but 3. The extreme blocks rest upon a double ⊤ beam, the hollow side of which they fit accurately. These blocks, employed with joints of plaster, form arches, which M. Garcin has submitted to tests, to compare their strength with the other systems which are employed in a similar manner.

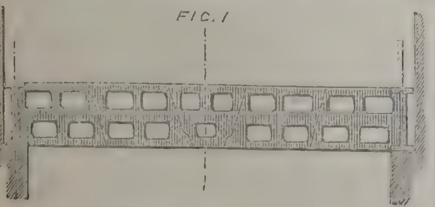
For this purpose two double ⊤ beams were held securely by bolts parallel to each other, and 0·745 m. apart. The height of the beams was 0·12 m. Between these beams arches of several different systems or kinds of material were built, each having a span and thickness corresponding to the supports, and a length of 0·45 m.

Some days after, each was placed horizontally between two supports, and secured by wooden wedges in an embrasure in such a manner as to prevent any flexure of the iron beams.

Each was then loaded with boxes, containing iron balls, along the centre of each arch to the breadth of 0·37 m., or half the span.

The first tried was an arch of Garcin's system (Fig. 1), made in cement three weeks previously It presented a surface of 0·745 m. × 0·45 m. = 335 sq. metres, and weighing 41·3 kilogrammes, which is equal to 123·3 kilogrammes per sq. metre.

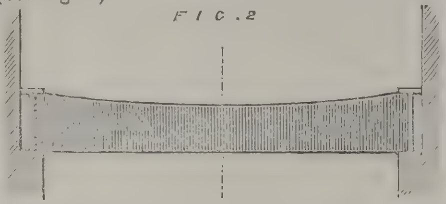
FIG. 1



The second was of plaster, the same system and the same age as the first, and weighing 102·4 kilogrammes to the sq. metre.

The third example was of ordinary plaster, slightly trough-shaped, so that the thickness at the middle of the span was only 0·095 m., and the weight 130 5 kilogrammes per sq. metre. (See Fig. 2.)

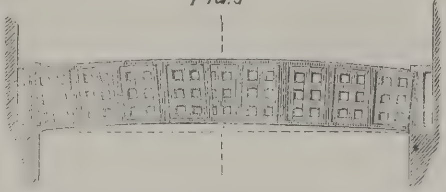
FIG. 2



The fourth trial was upon a system formed of hollow bricks, laid with plaster joints, without cambre, and weighing 128·7 kilogrammes per sq. metre.

The fifth was formed of bricks, of the same kind as the last, forming an arch, with a versed sine of 0·010 m., obtained by the aid of inclined joints, with a wedge-shaped keystone; weight per sq. metre, 143·6 kilogrammes. (See Fig. 3.)

FIG. 3



These two latter specimens had each 9 bricks in the span, the bricks weighing 1,960 kilogrammes to the 1,000, and laying (edgewise) 55 to the square metre.

The test load in each case has been carefully increased up to the point of rupture.

The following table exhibits the result of these experiments :—

No.	Systems experimented upon.	Breaking weight in Kilogrammes.	Breaking weight per metre. Kilogrammes.	Weight of masonry per sq. metre. Kilogrammes.
1	Garcin's System in Cement	736	2340	123·3
2	,, ,, Plaster	880	2790	102·4
3	Ordinary ,, Plaster	592	1880	130·5
4	,, ,, Brick, without arching	1448	4720	128·7 } 136·2
5	,, ,, ,, slightly arched	1824	5790	143·2

The third and fourth columns show the comparative advantages of the different systems.

The voussoirs of M. Garcin weigh 102·4 kilogrammes per sq. metre, but their ultimate resistance is only 2,790 kilogrammes.

The systems in brickwork weigh 136 kilogrammes, but they resist up to 5,790 kilogrammes weight. These figures show for each of these systems their relative security, and afford suggestions as to the method of judiciously employing each.

◆

The Glasgow Institute of Architects.—The third annual general meeting of this Institute was held on the 18th inst., at noon, within its Registered Office, 157, S. Vincent-street. Mr. Alex Thomson, vice-president, occupied the chair. The annual report and treasurer's statement were submitted and approved of. The following were elected as the council of management for next year—Messrs. J. Salmon, I.A., 141, West George-street; Alex. Thomson, I.A., 183, West George street; Geo. Bell, I.A., 37, West Nile-street; John Baird, I.A., 112, West Regent-street; James Boucher, I.A., 177, S. Vincent-street; Campbell Douglas, I.A., 266, S. Vincent-street; H. K. Bromhead, I.A., 159, West George-street; David Thomson, I.A., 29, S. Vincent-place; H. H. M'Clure, I.A., 65, Sauchiehall-street; John Gordon, I.A., 175, Hope-street. A meeting of the Council was held immediately after the general meeting, when Mr. Alex. Thomson was chosen president; Mr. Campbell Douglas, vice-president; Mr. James Boucher, 177, S. Vincent-street, treasurer; Mr. Wm. MacLean, writer, 157, S. Vincent street, secretary; and Mr. Geo. Bell, 37, West Nile street, auditor of professional accounts.

Civil Engineering.

◆

EASY CALCULATION OF EARTHWORK TABLES.*

ABOUT the first thing a railroad or canal engineer has to do, after his work is cross-sectioned, is to make tables of excavations and embankments for the slopes and bases used. For the benefit of such, I will give my formula for calculating tables of earthwork, of any slope or base. By this method an engineer can make tables in half a day that would, by any other, take three days.

Now let C = cubical contents in feet of a prism 100ft. long of any slope or base and 1-10ft. deep. C′ = 0·2ft., C″ = 0·3ft., C‴ = 0 4ft., and S = ratio of slope multiplied by two. The following is the formula :—

$$C + C + S = C',$$
$$C' + C + (S \times 2) = C'',$$
$$C'' + C + (S \times 3) = C''',$$

which can be continued in the same manner *ad infinitum*. Now to apply the formula, let us suppose it is required to compute tables for excavating prisms 100ft. long, base 20ft., slopes 1½ to 1. By any method find the cubical contents in feet for a prism of the above form 0·1ft. deep, which will equal 201 5ft. = C; and ratio of slope, 1½ × 2 = 3 = S.

Example 1.

201·5=C=contents for 0·1ft. deep.
201·5+201·5+(3)=406·0=C′ ,, ,, 0·2 ,,
406·0+201·5+(3×2)=613·5=C″ ,, ,, 0·3 ,,
613·5+201·5+(3×3)=824·0=C‴ ,, ,, 0·4 ,,

and so on to any depth.

Example 2.

Embankment: Prisms 100ft., base 12ft., slopes 3¼ to 1. C = 120·75ft. S = ¾ × 2 = 1·5.

120·75 = C = contents for 0-1ft. high.

120·75 + 120 75 + (1 5) = 243·00 = C′ = contents for 0·2ft. high.

243·00 + 120·75 + (1·5 × 2) = 366·75 = C′ = contents for 0·3ft. high.

366·75 + 120 75 + (1·5 × 3) = 492·00 = C‴ = contents for 0 4ft. high.

492·00 + 120·75 + (1·5 × 4) = 618·75 = contents for 0·5ft. high.

To insure accuracy in calculating these tables, it is well to calculate each foot by the prismoidal formula; then if you have made an error it will be detected. I leave it with the person using my formula as to what arrangement he shall make, but would suggest the use of two columns only. Thus, using the figures above :—

Contents.	Depth in Feet.
120·75 = 120·75 1·5	0·1
243·00 = 120·75 3·00	0·2
366·75 = 120·75 4·50	0·3
492·00 = 120·75 6·00	0·4
618·75 =	0·5

◆

COMPETITIONS.

New Offices for the City of London Union.—The following gentlemen have been invited to furnish designs in competition :—Mr. F. Chambers, Mr. Hy. Dawson, Mr. T. C. Clarke, Mr. Thos. Blashill, Mr. J. E. Saunders, and Mr. W. Hudson.

Wednesbury Town Hall.—The building committee appointed to report on the designs sent in have made their report. At the last meeting of the Local Board, the sealed envelopes sent by the competitors were opened, when it was ascertained that the selected competitors were :—1st, "Paix," Mr. J. Loxton, Wednesbury; 2nd, "Square and Compasses," Mr. S. Horton, Wednesbury; 3rd, "Experiar," Mr. G. B. Nicholls, West Bromwich. The premium in the first case was £25; 2nd, £12 10s.; 3rd, £5. The premium in the first case will be merged in the commission. "The Chairman remarked (says the *Birmingham Gazette*) that Mr. Loxton would have to give up his seat at the Board as he would be an interested party, and it would not be considered fair for the funds of the Board to be passing through his hands, his design having been accepted. He (the Chairman) was very sorry for this, as the Board would lose the services of one of their most valuable members (hear, hear). He was proud that a Wednesbury man had carried off the prize (hear, hear). The report was adopted, and it was resolved to advertise for tenders for the erection of the building." It is well that the competitors and others who may compete for such jobs in future should bear in mind that the first successful competitor in this instance is a member of the Board, the second is a Wednesbury man, and the third is of West Bromwich. About twenty-five designs were sent in for competition, twenty-two of them might have "spared their breath to cool their porridge." When will these farce competitions end ?

---

* From "Extraits des Annales du Conservatoire" through *Revue Industrielle*.

* By T. J. Nicholl, C.E., in the *Railroad Gazette*.

Yeovil.—Plans have been invited by the Committee for the new dispensary and infirmary which are proposed to be erected on a site near the Kingston turnpike-gate. No less than sixty different sets of plans have been received.

◆

THE INSTITUTION OF CIVIL ENGINEERS.

PREMIUMS—SESSION 1869-70.

THE Council of the Institution of Civil Engineers have awarded the following premiums :—

1. A Telford medal, and a Telford premium, in books, to Edward Dobson, Assoc. Inst. C.E., for his paper on "The Public Works of the Province of Canterbury, New Zealand."

*2. A Watt medal, and a Telford premium, in books, to R. Price Williams, M. Inst. C.E., for his paper on "The Maintenance and Renewal of Railway Rolling Stock."

*3. A Watt medal, and a Telford premium, in books, to John Thornhill Harrison, M. Inst. C.E., for his paper on "The Statistics of Railway Income and Expenditure, and their bearing on future Railway Policy and Management."

4. A Telford medal, and a Telford premium, in books, to Thomas Sopwith, junr., M. Inst. C.E., for his paper on "The Dressing of Lead Ores."

5. A Telford medal, and a Telford premium, in books, to James Nicholas Douglass, M. Inst. C.E., for his paper on "The Wolf Rock Lighthouse."

6. A Watt medal, and a Telford premium, in books, to George Berkley, M. Inst. C.E., for his "Observations on the Strength of Iron and Steel, and on the Design of parts of Structures which consist of those Materials."

7. A Watt medal, and a Telford premium, in books (to consist of the second series of the Minutes of Proceedings, vols. xxi. to xxx. inclusive), to Robert Briggs, of Philadelphia, U.S., for his paper "On the Conditions and the Limits which govern the proportions of Rotary Fans."

8. A Watt medal, and a Telford premium, in books, to Edward Alfred Cowper, M. Inst. C.E., for his Paper on "Recent Improvements in Regenerative Hot Blast Stoves for Blast Furnaces."

9. A Telford premium, in books, to John Grantham, M. Inst. C.E., for his paper on "Ocean Steam Navigation, with a view to its further development."

10. A Telford premium, in books, to Daniel Makinson Fox, M. Inst. C.E., for his "Description of the Line and Works of the Sao Paulo Railway, in the Empire of Brazil."

11. The Manby Premium, in books, to Emerson Bainbridge, Stud. Inst. C.E., for his paper on "Coal Mining in Deep Workings."

The Council have likewise awarded the following prizes to students of the Institution :—

1. A Miller prize to Robert William Peregrine Birch, Stud. Inst. C.E., for his paper on "The Disposal of Sewage."

2. A Miller prize to Henry Thos. Munday, Stud. Inst. C.E., for his paper on "The Present and the Future of Civil Engineering."

3. A Miller prize to William Walton Williams, junr., Stud. Inst. C.E., for his paper on "Roads and Steam Rollers."

4. A Miller prize to Sydney Preston, Stud. Inst. C.E., for his paper on "The Manufacture and the Uses of Portland Cement."

5. A Miller prize to Edward Bazalgette, Stud. Inst. C.E., for his paper on "Underpinning and making good the Foundations of the Irongate Steam Wharf, St. Katherine's, London."

6. A Miller prize to Josiah Harding, Stud. Inst. C.E., for his paper on "The Widening of the Liverpool and Manchester Railway between Liverpool and Huyton, and on the Construction of a Branch Line to St. Helen's."

7. A Miller prize to the Hon. Philip James Stanhope, Stud. Inst. C.E., for his paper on "The Metropolitan District Railway."

◆

Ownership of Architects' Drawings.—A special general meeting of the Royal Institute of British Architects (of members only) will be held on Monday evening next, at eight o'clock, to discuss the recent decision of the Law Officers of the Crown with reference to the ownership of the drawings of the Houses of Parliament; and of the code of conditions sought to be imposed by the Office of Works upon architects employed on Government business.

Building Intelligence.

CHURCHES AND CHAPELS.

Cumbwitch.—On Monday the Bishop of Bath and Wells consecrated the newly-built church dedicated to S. Peter, at Cumbwitch, near Bridgwater. The work has been in progress for nearly three years. The builder has been Mr. Squibbs, of Bridgwater, and the architect Mr. C. Knowles, of Bridgwater. The edifice will accommodate 240 persons, at a cost of about £2,000.

Dewsbury.—Last week a new mission-room, belonging to the new district parish of S. Luke, Dewsbury, was opened. The building, which is from designs by Mr. Henry Holtom, architect, is entirely of rough-hewn stone, and is designed in the Early English style of the Transition period. The gable end is presented to Leeds-road, with the entrance in a slightly projecting porch in the centre, flanked by lancet windows. The sides are broken by buttresses and two-light windows with Gothic heads, and the building is roofed with parti-coloured cut slates. The cost of the buildings, fittings, &c., amounts to £560, but it would have been much more had not the architects and others given their services.

Glasgow.—On Tuesday, the foundation-stone of a new edifice for the congregation of S. Mary's Episcopal Church was laid by the Earl of Glasgow. The old building in Renfrew-street is to be superseded by an elegant church in the Early English style, situated in Holyrood-crescent, at the west end of the city. The cost is estimated at £20,000, and it is intended to accommodate 1,000 persons. The sum of £14,500, which was obtained for the ground on which the old church stood, will be available for the building fund, in addition to which subscriptions to the amount of £3,500 have been received, and the remainder, it is expected, will be obtained in the course of a year.

Grantham.—The Congregational Church, S. Peter's-hill, Grantham, was formally opened for public worship on Thursday week. The church occupies a central site at the junction of Avenue-road and Castle-gate with S. Peter's-hill, and is adjacent to the new Town-hall. The style of architecture adopted is the English Gothic of the thirteenth century, the material used for the walling being Ancaster stone lined with bricks. The church consists on plan of a nave and side aisles, divided by two rows of columns and arches. The church seats 600 persons, and there are two vestries at the north end. Beyond the vestries is a school or lecture-room, capable of accommodating 250 adults, and adjoining are three class-rooms, each seating twenty persons. An infant-class-room for thirty infants, kitchen accommodation, and other conveniences are also provided. A minister's house has also been erected on the site. The total cost of the church, schools, and manse, exclusive of the cost of the site, will be under £4,000. The work has been executed by Messrs. Rudd & Son; the plumbers' and glaziers' work by Mr. Lincoln; the carving by Mr. Matthews; and the painters' and decorators' work by Mr. Green, all of Grantham. The church is heated by Blake's patent hot-air apparatus. The architect is Mr. James Tait, of Leicester.

Holy Trinity, Wolverton.—A reredos has just been fixed in this church. It is constructed throughout of English oak, from a design by Mr. E. Swinfen Harris, architect, of London, and consists of three compartments, the centre containing within a cinquefoiled arch a panel on which is painted on a gold ground angels censing and adoring, between which rises the altar cross of brass on a raised base of oak. The side compartments contain, within cusped arches, the Annunciation, also on gold ground. Old mahogany panels have been used. The walls of the chancel have been decorated; the space over the east window being treated with the "Adoration of the Lamb." The polychromy throughout has been very ably carried out by Messrs. Bell & Almond, of London.

Hull.—On Tuesday the newly-erected church of S. Matthew, Anlaby-road, Hull, was consecrated by the Archbishop of York. The architects are Messrs. Adams & Kelly, of 18, Park-row, Leeds. The style is Gothic, of the thirteenth century. The building comprises clerestoried nave with north and south aisles and a chancel, terminating with semi-octagonal apse, having organ chamber on north side, and clergy and choir vestries on the south side. At the east end of the north aisle is placed the tower and spire, and communication to ringing chamber and belfry stages is by a spiral stone staircase. The church is constructed of brick and plastered internally. The walls are faced externally with white brick relieved by red brick arches and bands, and chamfered and moulded brick jambs and arches to the several windows, doors, &c. The spire is to be constructed of brick with floriated capstone, surmounted with wrought-iron cross and copper gilt weathercock; chamfered stone coping to the several gables, finished with saddle stone and crosses. The apex of the roof of the apse has an ornamental wrought metal cross. The nave arcading and other internal arches are of moulded red brick; the shafts of the same are of stone with moulded bands and bases, the bases being sufficiently high to be seen above the seating. The internal dimensions of the building are :—Length, 123ft. 3in.; width, 54ft.; height from nave floor to ridge, 52ft. 6in. The height of the tower and spire, when completed, will be 157ft. Accommodation is provided in the church for over 800 adults, and the total cost of the building, including fence walling, is £4,500. Mr. C. Hutchinson, Hull, is the contractor for the brickwork, masonry, plastering, carpenter, joiner, and painters' work.

Oxford.—Extensive operations have been carried out at Christ Church College, Oxford, during the Long Vacation. The interior of the cathedral has been in great part restored, notably the east end, where two Norman windows, as nearly reproductions of the originals as possible, have replaced the former Gothic window. The screen separating the Latten Chapel from the choir and northern transept has been removed by which step the fine Norman pillars are seen to some advantage. It is proposed to restore the exterior when more funds are forthcoming. Mr Gilbert Scott, R.A., is the architect, whose plan have been carried out during the whole of th Long Vacation. The cathedral is now open. The walls of Tom Quad, which were in some case showing signs of decay, have been renewed wit fresh stone, while the common room, treasurer' office, &c., under the hall have also undergon alterations.

Stourbridge.—S. Thomas's Church, Stour bridge, has been re-opened after renovation unde the direction of Messrs. Alsopp & Son, of tha town. The church has been reseated throughou the sanctuary enlarged, and the royal arms, whic formerly hung high over the altar, removed. Th cost of the work is about £300.

Torrington.—A new chapel in connection wit the Torrington Union Workhouse was opened o Saturday week. It is a building in the Goth style, comprising nave, chancel, and porch, wit an ornamental bell-turret on the western gabl The walls are of native stone, with Hatherleig stone dressings; the roofs are open-timbered, an the windows filled with stained glass. The seat which are open, afford room for 200 person The chapel was designed by Mr. S. Hoope architect, of Hatherleigh, who has been engag for some time in carrying out the plans for t building of a new hospital and enlarging an making extensive alterations in the workhou (which are now nearly completed), in complian with the requirements of the Poor Law Boar at a cost of about £1,000. The contractors we Messrs. Hookway & Petherick.

BUILDINGS.

Blackburn.—The foundation stone of n Schools for the Holy Trinity Parish was laid Saturday last by Edward Kenworthy Hornb Esq., M.P. The building is after the Ea English or Lancet period, and will be of sto and is being carried out from designs and un the superintendence of Mr. James Bertwist architect, Blackburn.

Darlington.—The ceremony of laying t foundation stone of S. William's Catholic Scho Darlington, was performed on Saturday week the Bishop of Hexham and Newcastle. T buildings have been designed in the Gothic st by Mr. Richard Robinson, architect, of Darlingt and comprise a large lofty schoolroom, 122ft. lo and 24ft. wide; a class-room, 15ft. by 12ft. 9i with two large porches, and separate yards boys and girls.

Delph.—S. Thomas's new Schools, Friar M situate in Delph, near Oldham, and in connect with the above parish, were opened on Thurs week. The style of the building is Early Decora Gothic. The principal front has a large cen gable, with 3-light windows filled in with Geometrical tracery, and surmounted by a handsome belfry with angle shafts and canopies. The porches at each end have double-pointed arches and gables, and between these and the centre are four 3-light windows divided by stone mullions. The rooms are lined with pressed brickwork to the cill line. The architects were Messrs. Lockwood & Mawson, of Bradford and London.

---

* Have previously received Telford Medals.

NOTICE.

WITH the aid of the new postal arrangements, which came into operation on the 1st inst., the Building News will in future be supplied through the post at 15s. per annum, instead of 17s. 4d. as hitherto. The halfpenny postal card will also be found useful to those who have scraps of building information, tenders, intercommunication queries and replies, &c., to send.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

To Our Readers.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

Letters relating to advertisements and the ordinary business of the Paper should be addressed to the EDITOR, 31, TAVISTOCK STREET, COVENT GARDEN, W.C.

Advertisements for the current week must reach the office not later than 5 p.m on Thursday.

Received —W. Y., H. W. & Co., R. G. & Co., P. N., B. V., R. W. F., G. D., J. & W., W. M., G. M., E. & R., H. W., M. & Co., W. H. B., R. G. & Co., W. H. L., M. E. & Co., J. G., W. & W., Rev. F. G., I. J. & Sons.

Patrick Auld.—Description to hand.

J. H. P.—You can send any amount of manuscript up to two ounces for one halfpenny. The act says:—"Every packet must be posted either without a cover or in a cover open at both ends, so as to admit the contents being withdrawn for examination; otherwise it will be treated as a letter." We have had to pay threepence on a small packet for no other reason than that the halfpenny stamp partly covered the wrapper and partly covered the manuscript. The manuscript could not be withdrawn without destroying the stamp. The Post-office took advantage of this miserable objection and charged threepence.

Erratum.—Under the head of "Competitions," in last week's Building News, the offices for which designs had been sent in were stated to be for the Farnworth Local Board, whereas they are for the Local Board of Barton, near Manchester.

Correspondence.

GREAT EXPECTATIONS.

(*To the Editor of the* Building News.)

Sir,—The following advertisement appeared in your paper a short time since :—

> WANTED, a competent Man to act as ASSISTANT INSPECTOR of NUISANCES to the Bromley Local Board. One having experience in surveying and sewer work will be preferred. None need apply whose character will not bear the strictest investigation. Applications in the handwriting of the candidate will be received at any time up to the 22nd of OCTOBER. Personal applications will not on any account be entertained.—Address to the Sanitary Inspector, Local Board's Offices, Bromley, Kent.

The following is the reply I received to my application:—

> Sir,—The salary my Board propose to give is 25s. per week.
> Yours truly,
> Arthur Jacob, Engineer, &c.
> Engineer and Surveyor's Office, Bromley, Kent.
> Oct. 17th, 1870.

How the Bromley Board can expect a man "having experience in surveying and sewer work," and possessing a character that will "bear the strictest investigation," for 25s. a week, or less than a journeyman carpenter gets, and about as much as a London policeman, I can scarcely imagine; can you? An Applicant.

ENAMELLED SLATE.

Sir,—A friend of mine has just forwarded to me a copy of the Building News of the 16th ult., and directed my attention to an article in it on "Slate and its Uses," in which you state that within the last twenty pears the uses of slate have been multiplied a hundredfold. You add that "foremost among those who turned their attention to working slate stands the late firm of A. A. Robinson & Co.," and you go on to describe the process of enamelling by dipping, splashing, sponging, hand-graining, &c.

From this you would lead the public to infer that these improvements and extensions of the uses of slate are due to the above-named firm. You surely know that to Mr. Magnus, of the Pimlico Slate Works, is due the invention of enamelling slate, which he introduced and patented thirty years ago. You surely cannot be ignorant of this fact, far you must have seen his beautiful productions at the Great Exhibition of 1851, at the French Exhibition, at the Dublin and the International Exhibitions; at all of which he received first-class medals (double medals at the French and International), as well as the medal of the Society of Arts. (See Reports of the Juries, Exhibition, 1851, and Paris Exposition.) As a friend and admirer of that talented and enterprising gentleman, I cannot allow Mr. Magnus's well-merited fame to be ignored, and his achievements ascribed to others. I trust to your sense of what is due to Mr. Magnus, to the public, and yourself, to publish this letter.—I am, &c.,

Herbert Farren, Secretary.

The Valencia Slate Slab Co., Limited,
155, Buckingham Palace-road,
London, Oct. 25.

OVERCROWDED STATE OF THE PROFESSION.

Sir,—If a man's endeavours to be of service to his country should depend on his knowledge of grammar, then we have lain under a grave mistake for a considerable time. According to this theory we should have had no Wellington or Nelson, no Brindley or elder Stephenson, yet these were men whose "rivalry" was felt and feared. Some living architects in good practice I think would hardly submit to this new theory. I know men of professional skill and experience who write *where* when it ought to be *were*, and some to whom it would be an easier task to bridge over the Straits of Dover than properly to use the verbs *to lay* and *to lie*.

This seems to be, however, the only argument of your erudite correspondent who signs himself "B. H." As to his assumption that the *seven-pupil man*, who belongs to a "large body of highly respectable and honourable professionable men," has a solicitor at his back I think is very probable, and also that the solicitor finds him a profitable client.

"B. H." does not refer to my communication in the same copy of your journal, and therefore I assume he approves of my sentiments and endeavours, as there given.

Your anonymous correspondent seems shocked at the gentleman with seven pupils, no uncommon number I believe, and therefore I see no reason to discredit the statement so graphically set forth. It may abate the anger of "B. H." to some degree to be informed that I for one have been the means of preventing many young men from entering the architectural business, and during the past month have prevailed upon three promising youths not to embark in this highly overcrowded and honourable profession. This course I have adopted, as my position enables me to do, with no other reward than that of doing some little service to the community in my humble way; and I intend to continue the same course as long as I am able. I am not influenced by the outside tinsel and glitter, but am behind the scenes.—I am, &c.,

J. S.

THE COTTAGE HOSPITAL, LYTHAM.

Sir,—The illustrations of modern buildings which appear in your pages from time to time, should, as a rule, be considered as some guarantee of their commendatory features; and buildings of a special character, such as the Cottage Hospital, in this week's issue of your journal, would not improbably be referred to as a precedent, from the few structures of this class as yet erected or designed.

This fact may be accepted as a fair excuse for errors in the arrangement of the plan; they are, however, so fatal, in my judgment, to the healthful administration of the hospital, that I beg to be allowed to draw attention to them.

The only means of light and ventilation to the central passages, and somewhat narrow stairs, into which the doors of all the sick wards open, appears to be by a skylight, which (though not indicated) may be assumed over the staircase. As a rule, the entrance door would be closed, and thus the impure air from the wards will of necessity commingle.

The ward "A," for "highly infectious cases," instead of being isolated, has its *only door* on the half space landing of this general staircase, up and and down which the inmates and nurses of the upper wards will be constantly passing. This seems to be a most serious mistake; either of the other wards appear more isolated than this.

The doors of the upper male and female wards, "B" and "C," are in too direct proximity; the shifting of each a foot or two right and left from each other would prevent sight from ward to ward, when the doors are open. The absence of a scullery, sink, or closet, to these upper wards, "A," "B," "C," is a most unaccountable omission. How the proper care and attention to the patients' health and necessities are to be exercised under such conditions, must be matter of surprise to any one with the most superficial knowledge of an infirmary.

The only scullery, "I," seems far too small; and the only access thereto being across the kitchen, where the cooking of all kinds will be carried on, and the attendants most probably take their meals, is ill-considered. Passing the pantry, "K," *en route*, though a small matter, perhaps, to people with strong stomachs, completes certainly the nastiness of the arrangement.

As a climax of these defects and deficiencies—dangerous, as I venture to believe, to the sanitary condition of the hospital—the wash-house, instead of being a detached building, is brought under the same roof with the domestic apartments, and the fumes of foul linen are allowed to mingle with the internal air, by means of the door just beyond the kitchen.

Anything more at variance with recognised hospital rule than this can scarcely be conceived! Opinions and statistics of the highest medical authorities are not wanting to show that nothing is so likely to pollute the air, and spread infection, as the fumes from foul linen.

Considering these things, sarcasm would suggest a certain consistency in the provision of a roomy mortuary to this small hospital. But seriously speaking, is there not some little thoughtlessness in making Death stare in the face of every hapless woman who may chance to look out of the northern window of her ward? In the absence of study or precedent, delicacy of feeling would place so sad a tenement out of sight of the hospital, instead of making it the most prominent of the outbuildings.

My remarks may seem somewhat severe, but the gentlemen who are responsible for the arrangement and design of this building will know that, as a perfect stranger, I cannot possibly be actuated by improper or jealous motives. I know by experience that medical gentlemen can bring their professional knowledge to bear with the greatest good results in the planning of these structures. Still it is evident there has been some blundering here, and as the first stone has not long been laid, it may not be too late to take hints which are well-intentioned.

I have avoided reference to the elevation: tastes differ, and there is no rule for hospitals, more than hotels. It seems to me, however, that there is no advantage, even on æsthetical considerations, in breaking up the small roof of main building into an objectionable "ridge and furrow." And there is an aerial construction about the central chimney stack hardly reconcileable with the plans.—I am, &c., Samuel Knight.

London, Oct. 25, 1870.

CONCRETE BUILDING.

Sir,—In reply to Mr. Hooper's letter in the Building News for April 29 last, I send some plain facts respecting the relative economy of the two methods of constructing with concrete, now being used by me at Perry-street, Gravesend, viz., building with blocks (*my* system), and erecting with an apparatus. When I speak of economy, I not only mean economy of first cost, but as tested by the quality of the work done by the two methods. By the system now used by me I have succeeded in building houses, the walls of which remain perfectly dry and free from sweating. I build my walls hollow, 3½in. thickness inside, and 3½in. outside, with a 5in. air-apace between, so that a 12in. wall is built with 7in. of material. By means of the air-space moisture is prevented from penetrating, as the blocks of which the inner wall is built are always at one temperature.

When I first brought my system before your readers I was not aware of all these secrets. In my first plan I bonded my blocks as headers and stretchers, and having so many headers through the wall was a prolific cause of the walls sweating in damp weather. This proves that the coating or facing was porous. I coated my blocks with cement afterwards, not washed. I am now casting my headers hollow, and bonding them from wall to wall about every other one, and I have come to the conclusion that by these means my walls will never sweat. I lay two pieces of quartering on a level piece of ground, and I then work the concrete with my hand-float (though I am not a plasterer by trade, as was stated by your correspondent), well pressed in moulds made 6 to 1, taking care that it be well mixed, with not too much water and the gravel not too large. Here then I get my concrete blocks, all hard alike. I face the surface as I go on. This not only saves material, but skilled labour is rendered unnecessary. Any old woman or ploughboy can make the blocks, and any common labourer after a day's practice would lay them as well as myself. Instead of my blocks costing as much as bricks at 27s. 9d. per thousand (as stated in the Building News for April 29), 100 blocks, each equal to ten bricks, and therefore equal to 1,000 bricks when laid, cost as follows: 2 yards of gravel, 2s.; 4 bushels of cement, 8s.; labour in making, 3s. 6d.; total 13s. 6d., carting for cement (1s. 9d. per ton) not included. Your readers will thus see that by my hollow system I can do double the work in bulk with just half the material, giving a thicker wall into the bargain. So much for the non-necessity for skilled labour and the economy of material. I shall be happy to see any of your readers who take an interest in the subject, and will explain more fully to such the advantages of the most economical system of concrete building now in use.—I am, Sir, &c.,

W. May, Jun.

Northfleet, Kent, Oct. 24.

◆

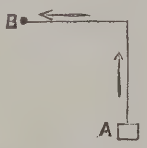
Intercommunication.

◆

QUESTIONS.

[2004] SCHOLARSHIPS.—Could any of your readers give me any information about the scholarships and medals that are given every year by the Royal Academy and Science and Art Department for architectural drawings? Have you to attend classes in London, or simply send drawings? Medal.

[2005] WATER SUPPLY.—Will any one who has made a similar experiment say if it is possible by the ordinary suction pump at B to bring the water from a well at A,



the distance being about 80 yards and the rise about 10ft.; and give the diameter of the pipe?—W. W.

[2006] WORK ON BUILDING SOCIETIES.—Could any reader of the Building News tell me where I could get a good work on "Building Societies," their principles, &c., &c.?—T. F., Preston.

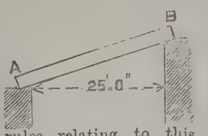
[2007] CHIMNEY SHAFTS.—I want to erect a brick shaft, square on plan, about 70ft. high, for a 25 horse-power portable engine, now used as a stationary one. Will some reader kindly give me information as to what the dimensions should be, such as thickness of brickwork at base and top, firebrick lining, height of same, area of footings, &c.? An early reply, with sketch of shaft, will oblige.—A. M. E. C. U.

[2008] SMALL HOSPITAL.—Can any of your readers inform me which is the best aspect for wards in a small hospital, the fronts of which face north, south, east and west?—X. Y.

[2009] DAMP WALLS.—Can any of your readers tell me the best means of making the brick wall of my house waterproof? It is already coated or washed with "cement," but this does not keep out the wet. The bricks have a large proportion of sand in them and seem of no use in keeping out the damp.—Damp Wall.

[2010] PUGIN CHURCH SEAT.—Would any brother subscriber be kind enough to inform me what the "Pugin Church Seat" is like, its cost and shape?—N. S.

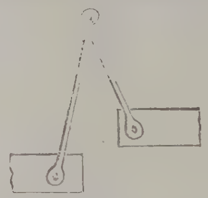
[2011] HYDRAULIC LIFTS.—Will any correspondent oblige me with the name of the manufacturer of a good hydraulic lift, capable of raising several tons weight at one operation? It must be altogether a different kind of thing to the petty examples used in hotels for the purpose of lifting visitors and their luggage.—Proprietor.



[2012] INCLINED BEAMS.—I should be glad to be informed of the correct manner of calculating the strength of a beam or girder placed, similarly to A B, in the annexed cut, upon two supports which are not upon the same level. Is the beam weaker or stronger than one of the same span and loading which is placed upon two supports on the same level? I have never been able to find any special rules relating to this kind of construction, which sometimes does occur in practice. In the case in question, suppose the actual length of the beam between bearings to be 29ft., the depth 2ft., and the material oak, what would be the breaking weight in tons, uniformly distributed over it, the breadth being also 2ft.? A solution of this practical question would no doubt be of value to others than—L. W.

[2013] DRY FOUNDATIONS.—Which is the best material to put in the walls of a house to keep the damp from rising? I am building a house of my own, and have been recommended to put concrete by some, slates by another, and other things by other friends, so that I am quite at a loss to decide among them. In what part of the walls also should the damp-proof course be put?—Amateur Builder.

[2014] PULL UPON TIE-RODS.—In the enclosed drawing a weight of 5 tons is suspended from the beams



of two roofs of unequal height by a couple of flat bars, and I wish to know if the strain or pull upon each is the same, or whether one should be made stronger than the other. Will some one kindly explain the way of arriving at this information?—M. M.

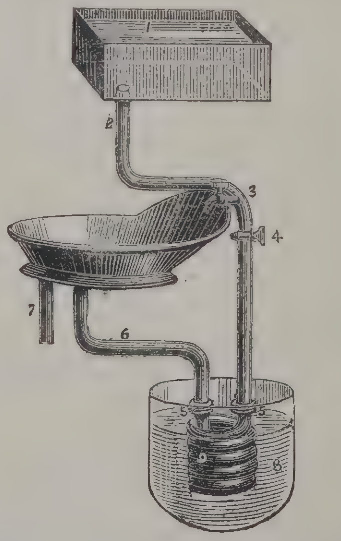
[2015.] PLANS OF COTTAGES.—I am desirous of getting plans of the above, with specifications and quantities. Is there not something of the kind published by some society, and where can I get them?—N. Y.

[2016] MODELLING WAX.—I am anxious to do a little modelling. Can any of your numerous readers kindly inform me how I can make and prepare modelling wax, such as used by jewellers, &c., and also of any method for colouring the same?—W. Wilson.

[2017] MOUNTING TRACINGS.—I should feel obliged if any of your readers would inform me the best way to mount tracings in ink or pencil, on drawing paper; and if a tracing is coloured will the same method apply?—Young Architect.

REPLIES.

[1903] HOT AND COLD WATER BATH.—I have put one down at a small cost (of which I enclose a rough sketch) on a principle which is much more simple and



quite as effective as the more expensive baths. It will be seen that fig. 1 is the cistern, 2, supply pipe; 3, cold water taps; 4, taps to break communication between hot and cold water, which should only be used when hot water is required; 5, union joints, by which coil and pipes can be connected or disconnected at pleasure; 6, hot water supply to bath; 7, waste pipe: 8, furnace; 9, coil. The pipes should be conveniently fixed, so that the coil may be easily removed when the bath is not in use. It will be quite plain to "Handy Man" that the water in the furnace must be made to boil. No. 4 tap should then be turned, which will cause a flow of water from cistern to bath. This tap should always be used first and cooled down with 3 tap. This principle dispenses with the difficulty of raising ho water with a pump, but in case of not having the advantage of the waterworks' water, a cistern or reservoir higher than the bath is necessary, and should be supplied with either draught or force pump; the former is the cheapest. N. B.—The coil should contain 50ft. My pipes are compo. and ½in. diameter.—Wednesbury.

[1993] NEW ELEMENTS OF HAND-RAILING.—In reply to "H.R." I send the annexed figure, by which I think that he or any other person must see that the bevels given are correct, but in his figure misapplied. Let any one get a piece of board, and take it to a width and thickness so that the square and bevels will apply correctly, and draw

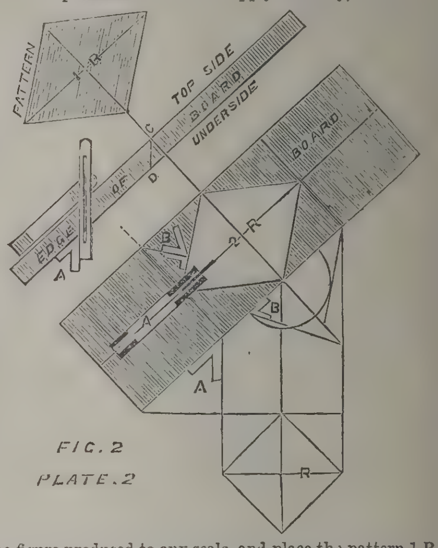
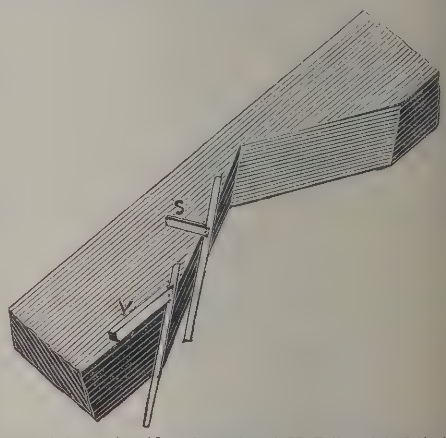


FIG. 2

PLATE. 2

the figure produced to any scale, and place the pattern 1 R on the board at 2 R. Mark the top side, then with bevel A mark the line C D on the edge of the board; square over on the under side and apply the pattern to the under side, and that is the mortise required and the bevel B correctly applied, that is, at right angles to any side of the mortise, reversing the bevels when changing from top to bottom; but the bevel B is not required for this mortise, but is given to be used in the production of a face mould for a hand-rail.—A Practical Stair-Builder.

[1993] ELEMENTS OF HAND-RAILING.—If "H.R." will experiment on a piece of wood he will find that all depends upon how the bevels are applied to the rail. He is so far correct in stating that the angles formed by the two bevels are not alike. But if the stock of bevel V (refer to his diagram) be placed in a line with the major axis of mortise, and the stock of bevel S be held square (or perpendicular) from the side of mortise, "H. R." will find that the tongues of both bevels will be in the same plane, or out of "wind" as stated by the American author.—T. Rashley.



[1996] UNANSWERED QUERY.—There are several methods of copying mouldings from buildings. One method is by the use of the leaden tape: a thin flexible riband of this metal, about a yard in length, is rolled into a coil, and by being manipulated and impressed upon the mouldings to be copied, and carefully removed and laid upon a sheet of paper, it can be traced off with a pencil. In using the tape the rough draft must be corrected by comparison with the original. A pair of compasses with the ends bent inward is useful in obtaining the breadth of members, and if furnished with a segmental scale bar or slide, affixed to one leg and passing through the other, the width of the neck of each undercut bowtell may be exactly marked. Another method, where the mouldings are not much undercut, is that technically called squeezing, and is practised by applying wet clay, prepared wax, &c. By a beautiful and ingenious instrument called the "Cymagraph" mouldings may be copied with the most perfect accuracy and full size, see *Engineers' and Architects' Journal*, No. 58. Another method is copying by the eye alone, on a reduced scale, and adding the measurements of each face. The practice of copying mouldings by the eye is of great importance in acquiring a knowledge of the subject.—W. R. A., Uckfield.

[1999] MEASURING TRACERY.—The usual method adopted is to take the superficial area of the tracery, the extreme dimensions of each stone being taken, and stated so in the schedule of quantities. The dowels should be counted and the number of them given. No allowances should be given, as it only falsifies measurements.—Thos. Pinch, Ordnance Surveyor.

[1999] MEASURING TRACERY.—The practice is to follow the operations of the mason. Take bed work plain work, circular ditto, sunk work, circular sunk, moulded work, circular ditto, moulded in short lengths &c., eyelets, cusp points, mitres giving the size to tracery, mitres to cusp points, &c., measure all points and number dowels; run grooves for glass, circular ditto. Some take radiating points as sunk work.—W. R. A.

[2001] DAMP WALLS.—Let your querist try Professor Church's Indurating process. See Messrs. Hockin, Wilson & Co.'s advertisement in your pages.—CLIPPER.

[2002] PITCH PINE.—No 1. $\frac{7}{8}$in. thick, and not more than 5in. wide. No. 2, not less than 1in. thick and $4\frac{1}{2}$in. wide (7in. will curl and spoil the floor. No. 3. The rough floor to be laid with the joints at an angle of 45 deg. with joists, and the top side traversed to a straight surface and the pitch pine boards laid (well glued on the underside) square across the joists in the usual way. No. 4. The pitch pine can either be dowelled and nailed on the edge (not through top) or ploughed and feather tongued. If the latter course be adopted, take care the groove is a small one and close to the bottom edge; paper is sometimes used, but it is a great injury to the floor, as it prevents wood touching wood, and the glue joining the fibres. The effect can easily be tested by glueing two pieces of wood together with the paper between and noticing the ease with which they are parted. No. 5. Floor can be pugged or not, as desired; of course pugging would be best. I have had exceptional experience with this kind of floor, and should be pleased to answer any further inquiries.—ROBERT PHILLIPS, Gainsborough.

[2002] PITCH PINE BOARDS run about $\frac{7}{8}$in. by $5\frac{1}{2}$in. wide, and should be laid on boards 1in. thick. If pitch pine is laid straight the rough boards are laid in cross direction. Pitch pine boards are glued on one edge and undernailed on the other. When the floor is not on the ground floor it ought to be pugged in order to deaden sound in rooms below.—R. F. K.

◆

WATER SUPPLY AND SANITARY MATTERS.

KIDDERMINSTER.—The Mayor of Kidderminster turned the first turf of a reservoir for new waterworks on Tuesday week.

MOSSLEY BOARD OF HEALTH.—Acting upon the advice of the Secretary of State for the Home Department, the Mossley Local Board of Health have unanimously decided to join the Ashton-under-Lyne, Stalybridge, and Dukinfield Waterworks scheme, for the supply of their district, at a cost of £43,000, or one-ninth the amount of capital to be expended in the construction of the works.

THE SEWERAGE OF DUBLIN.—The filthy condition of the Liffey has for some years past been the sanitary scandal of Dublin. Measures have just been sanctioned for its abatement. Two intercepting sewers will be made, which, as at present proposed, will open into the sea below the tideway. This improvement will be effected at the cost of £350,000, which will be advanced by the Government on the security of the local rates. It is, however, says the *Lancet*, a sad pity that the errors of the London system are to be repeated in Dublin, and, if not too late, we would venture to suggest that some attempt should be made to divert the outlets to a place where, by pumping, some return may be obtained. The waste of matters which are in fact convertible into wholesome food is unpardonable.

WELLS.—A special meeting of the Wells Town Council was held last week for taking into consideration a memorial by nearly one hundred of the more influential inhabitants and house owners in the city, calling upon the council to exercise their rights for bringing a better supply of water to the town; also an application by Mr. W. J. Welsh, with a view to his forming a private company for the purpose. A vote was taken, the effect of which was that Mr. Welsh's application is not to be entertained; but on the other point, the motion was carried that the Council should not attempt a water supply, but this was accomplished by the casting vote of the Mayor, who, throughout the discussion of the question—over a period of several months—has (says the *Dorset County Chronicle*) taken a very decided part against the memorialists; "in fact, he went so far as to assert that an additional supply of water is unnecessary, and this in the face of the fact that hundreds of houses are without water, and the occupiers obliged to get supplied from the public conduit, to obtain which some have to go nearly a quarter of a mile." Has the Mayor of Wells a vested interest in dirt and disease? Is he a brewer, drawing a princely revenue from the beer-shops and public-houses of Wells, to which resorts many thousands are almost driven by reason of the shameful way in which they are housed?

◆

LEGAL INTELLIGENCE.

MIRFIELD.—THE NEW VICARAGE.—DISPUTE WITH THE CONTRACTOR.—At the Dewsbury County-court, on Thursday week, a case was heard in which Mr. George Watts, of Mirfield, brought an action against John and George Sheard, also of that place, to recover the sum of £14 17s. 6d., under circumstances detailed in the evidence of and for the plaintiff. Mr. Chadwick appeared on his behalf, the defendants being represented by Mr. Turner. The case having been opened, plaintiff was sworn. He said he was a joiner and builder in Mirfield; defendants were masons. During the present year, it was arranged to build a vicarage, and on the 25th of May George Sheard applied to him for a tender. He demurred, but on Sheard saying that if he would do it for him, he should do the joiners' work, he went to take the quantities. That was the evening of the letting. Sheard said he had had a privilege given him; that it would do if he sent in his tender three days after the proper time. He took the quantities for the joiners', painters', and smiths' work required at defendant's request, and on the 27th of May sent him in an estimate amounting in the whole to £597 10s. Sheard from that estimate sent in a tender on the 28th, and got the job. On the 14th of July he told plaintiff the committee had objected to him (Watts) doing the work, and on asking for names, &c., he refused to give him any definite answer. It was on the 25th of June when Sheard first mentioned to him that he (Watts) was to have the job of doing the joiners' work. In consequence of having made that arrangement, he bought a horse for £12 to take up the materials, and gave up tendering for a warehouse in Dewsbury. His claim was made up of $2\frac{1}{2}$ per cent. upon £597 10s., for taking out the quantities and making the estimate. Cross-examined by Mr. Turner: It took him two days to take out the quantities, but he finished some of his calculations while going by railway to Manchester. He would swear defendant told him if he cast out the quantities he alone should have the job of doing the joiners' work. He did not give the estimate on the conditions named in a placard posted on the walls. He was not a painter, nor a smith. Re-examined: He had nothing to do with the vicarage committee, and therefore nothing to do with the placard. Sarah Watts, plaintiff's wife, confirmed his statement as to defendant having said he should have the work. Joseph Walker, builder, &c., said he was told by Sheard in Watts's presence that the latter was to do the joiners' work. Cross-examined: He considered the charges made by plaintiff reasonable, but he never paid a joiner for them. Thomas Ellis, mason, Hopton, gave similar evidence, but caused some amusement by saying on cross-examination that if quantities were taken out they ought to be paid for as ordered, whether made by architect, joiner, or sweep. Mr. Turner said his instructions were that this was a sub-contract, the tender being made on the condition given on the placard, namely, "No allowance for estimates." He also contended that plaintiff, a joiner, was not entitled to architects' charges. George Sheard, on being called, supported the statement of his advocate, and denied the truth of the evidence given by the plaintiff and his witnesses. His Honour said he thought the justice of the case would be met if he gave the plaintiff ten guineas. A verdict for that amount was therefore given, and, on the application of Mr. Chadwick, costs of attorney and witnesses were allowed.

THE CHANCEL GATES IN S. MARY'S CHURCH, TAUNTON.—This long-pending question again came before the Consistorial Court at Wells on Tuesday week. It will be remembered that early in the present year these gates were erected by the rector without a faculty, and without the knowledge of the then churchwardens. The churchwardens were cited to appear in the Consistorial Court at Wells, charged with having erected them, and the result was that Dr. Wallis, Deputy-Judge of the Court, ordered their removal. The order was obeyed, and a short time ago the present churchwardens applied to the Court for a faculty sanctioning the re-erection of the gates. The application was opposed by several parties, who, in support of their opposition, laid allegations in writing before the Court, Dr. Wallis, having admitted these allegations into Court, ruled that a portion of them were arguments only, and that he should require the remainder to be supported by affidavits, and the case was adjourned until Tuesday last for such affidavits to be submitted. Mr. Welsh, proctor for the opponents, produced nine affidavits from different parties. Mr. Foster, proctor for the applicants, complained that he had not been furnished with copies of them. Dr. Wallis said the case would be adjourned until the next court day, in order that he might consider the affidavits. If no counter-allegations are filed by the churchwardens, it is probable that judgment will then be given.

◆

Our Office Table.

◆

THE MIDLAND COUNTIES BRICK TRADE.—Mr. J. N. Peake, of the "Tileries," Tunstall, has forwarded to us a letter, which we cannot insert on account of its length and of its publication elsewhere, denying the statements made in Mr. George Smith's paper read at the Social Science Congress, and noticed by us in our number of Oct. 14. We cannot see that Mr. Peake *answers* any of Mr. Smith's statements, he simply *contradicts* them, and affirms that no such evils exist on his father's manufactory. We do not suppose for a moment that they do. The "Tileries" is well known to be a large and first-class establishment of its kind, must necessarily employ a large number of hands, and evidently comes under the operation of the Factory Act. As Mr. Smith pointed out the employees in *large* brick-yards were already protected. All he asks is that the same protection shall be extended to the smaller establishments employing less than fifty hands. We think if Mr. Peake reads Mr. Smith's paper again he will find that his letter was uncalled for.

PROPOSED IMPROVEMENTS IN SHOREDITCH.—At the last meeting of the Shoreditch Vestry a report of the Improvement Committee was read, recommending that the Metropolitan Board of Works be memorialised to form a new street from Commercial-street to Old-street-road, as a metropolitan improvement, at an estimated cost of £292,924, to be reduced by the value of the land to be acquired, available for re-sale; and also to widen High-street, Shoreditch, near the church, the estimated cost of which (subject to deduction of the value of the land acquired) would be £168,568. The report was adopted. At the same meeting it was announced that the Works Committee of the Metropolitan Board had recommended the Board to allow the Vestry of Shoreditch the sum of £2,207, as a contribution towards the widening of Huntingdon-street, Kingsland-road.

THE NEW OPERA COMIQUE.—The new theatre in the Strand bearing this name opens to-morrow (Saturday) evening, with Mdlle. Déjazet's company of French comedians. The building has already been described at some length in the BUILDING NEWS. It has been constructed from plans by Mr. F. H. Fowler, architect, of Fleet-street, Mr. Reid, of Hammersmith, being the builder. The whole of the ornamental work in relief has been executed by Messrs. White & Co., of Great Marylebone-street, in carton-pierre and papier-mâché, as also the whole of the ceiling, proscenium, box fronts, &c. The general decorations were executed by Mr. Bradwell, of Great Portland-street. The furniture has been supplied by Messrs. W. J. Villars & Son, of the London-road, Southwark.

THE INSTITUTION OF CIVIL ENGINEERS.—The members have just been informed, by circular, that the first ordinary general meeting for the session 1870-71 will take place on Tuesday evening, November the 8th, and that the meetings will thereafter be continued on each succeeding Tuesday to the end of May, with the exception of the 27th of December and the 3rd of January. Every member and associate has the privilege of introducing one friend to each meeting. The annual general meeting, to receive and deliberate on the report of the council on the state of the Institution, and to elect the officers for the following year, will be held on the 20th of December. The members have been invited to send in any original communications they may have prepared for reading at the meetings, and have been reminded that applications for admission from candidates desirous of joining the Institution can now be considered and dealt with.

ARCHITECTURAL ART CLASSES.—As we have already announced, classes for architectural modelling will be commenced at the Architectural Museum in November. We now learn that the instructor will be Mr. R. Morris, who is at present engaged in modelling the terra-cotta panels for the Wedgwood Memorial Institute at Burslem.

EXHIBITION OF OLD MASTERS.—The authorities of the Royal Academy have determined to repeat their winter exhibition of the works of old masters which proved so successful on the former occasion. We understand that many fine works have been already promised, including a few early water-colour drawings by British artists. The exhibiwill open directly after Christmas.

NEW MORTUARY BUILDINGS FOR THE CITY.—The Sanitary Committee presented on Tuesday a report submitting amended plans and estimates for the proposed mortuary buildings for the city in Golden lane. The Chairman explained that about a year ago the Commission decided to build the mortuary in question for a sum not exceeding £13,000, that since then the estimates had exceeded that amount by about £1,500, and that the committee were instructed to reconsider the matter with a view to bring them within the original sum. They now proposed to pay £5,000 for the site in Golden-lane, and £7,821 for the buildings—making togather £12,821. Mr. Haywood, the engineer, stated that reduction had been made by the compression of the size of every chamber, and that he did not expect that a larger sum than £500 would be required in addition for the fittings and ornamentation. The report of the committee was carried, and it was referred back for execution.

◆

Chips.

◆

The tower of S. James' Church, Taunton, is now in course of being taken down and rebuilt up to the top of the second stage, at a cost of from £900 to £1,000. The organ has been removed from the tower and placed in the north-east end of the church. Mr. Spiller is the contractor.

The exhibition of English porcelain at the Salisbury and South Wilts Museum has been followed by an exhibition of drawings by the old masters, a rare and excellent collection of works having been lent by amateurs and collectors in the locality.

The erection of a new Masonic Hall in Bristol is shortly to be commenced. The entire cost is estimated at £5,000. The Prince of Wales is announced to lay down the foundation stone.

The Exeter Cathedral restoration fund now amounts to £13,000.

The Bishop of Exeter has contributed £500 to a fund for improving the school buildings in connection with the church schools in the diocese of Exeter.

A clerk in an Erie hotel has a magnificent scheme in view. It is a circular hotel, to work on a pivot, like a locomotive turntable. The object is to give every guest a "front room."

There will be a private view of the exhibition of cabinet pictures in oil at the Dudley Gallery, Piccadilly, on Saturday (to-morrow), next the 29th inst.

The tenders of Messrs. J. Weeks and Co., for warming the new buildings for the Annual International Exhibitions at South Kensington, have been accepted.

The opening conversazione of the Architectural Association will be held at 9, Conduit-street, this evening. The classes of design and construction will commence on Friday, November 11.

The mosaic frieze of the Royal Albert Hall, 800ft. in length by 6ft. 6in. high, covering a surface of 5,200 square feet, is now completed, and fixed on the exterior of the building.

A plan for the drainage of Walton-on-Thames, so as to effectually exclude the sewage from the river, has been sanctioned by the Secretary of State, and will be proceeded with at once.

◆

LATEST PRICES OF MATERIALS USED IN CONSTRUCTION.

Timber.

Teak ....load	£12 10	13 10
Quebec, red pine	3 15	4 15
,, yellow pine..	4 0	4 10
St. John N.B. yellow	0 0	0 0
Quebec Oak, white..	6 0	6 10
,, birch........	3 15	5 0
,, elm	4 5	5 5
Dantzic oak	4 10	6 15
,, fir	2 15	4 10
Memel fir	2 15	4 0
Riga..................	3 3	3 10
Swedish	2 13	3 0
Masts, Quebec red pine	4 0	5 5
,, yellow pine..	4 0	5 5
Lathwood, Dantzic, fm	3 10	5 10
,, St. Petersburg	5 0	6 10
Deals, pr C., 12 ft. by 3 by 9 in.,		
Quebec, white spruce	12 0	17 0
St. John, white spruce	12 0	14 0
Yellow pine, per reduced C.		
Canada, 1st quality.	18 0	19 10
2nd do......	12 15	13 10
Archangel, yellow ..	11 10	13 0
St. Petersburg, yel...	12 0	13 0

Finland	£7 0	£8 0
Memel..............	0 0	0 0
Gothenburg, yellow	9 0	11 0
,, white	8 0	9 0
Gefle, yellow........	10 10	12 10
Soderham	8 10	12 0
Christiania, per C., 12 ft. by 3 by 9 in. yellow	10 0	12 10
Flooring boards, per sq. of 1in., first yel	7 6	10 6
First white........	7 0	9 6
Second qualities	6 0	7 0
Pumice Stone pr ton	6 0	8 0

Oils, &c.

Seal, pale....per tun	35 10	36 0
Sperm body	80 0	0 0
Cod	37 10	38 0
Whale, Sth. Sea, pale	36 0	0 0
Olive, Gallipoli......	48 0	48 10
Cocoanut, Cochin, ton	43 10	41 0
Palm, fine	39 10	0 0
Linseed	30 0	0 0
Rapeseed, Eng. pale..	45 10	0 0
Cottonseed..........	29 0	35 0

Metals.

Lead —

Pig, Foreign	per ton	£17	10	0	£20	0	0
,, English W.B.	do	20	0	0	20	5	0
,, Lead Co.	do	19	15	0	20	0	0
,, Other brands	do	18	0	0	18	5	0
Sheet Milled..................	do	19	15	0	20	0	0
Shot, Patent	do	21	0	0	21	0	0
Red or Minium	do	19	15	0	20	10	0
Litharge, W.B.	do	0	0	0	0	0	0
White Dry	do	27	0	0	0	0	0
,, ground in oil	do	0	0	0	0	0	0

Copper :—

British—Cake and Ingot	per ton	£67	10	0	0	0	0
Best Selected	do	69	0	0	0	0	0
Sheet	do	71	0	0	73	0	0
Bottoms	do	75	0	0	0	0	0
Australian	do	68	0	0	71	0	0
Spanish Cake	do	0	0	0	0	0	0
Chili Bars, cash	do	65	0	0	62	0	0
,, Refined ingot..........	do	67	0	0	69	0	0
Yellow Metal	per lb	0	0	6¼	0	0	7

Iron :—

Pig in Scotland, cash..........	per ton	£2	11	6	0	0	0
Welsh Bar, in London	do	7	2	6	7	10	0
,, Wales..........	do	6	10	0	6	12	6
Staffordshire................	do	7	10	0	8	0	0
Rail, in Wales	do	7	0	0	7	10	0
Sheets, single in London........	do	9	10	0	10	5	0
Hoops, first quality	do	8	10	0	10	5	0
Nail Rod	do	7	5	0	7	15	0
Swedish	do	9	10	0	9	15	0

◆

Trade News.

◆

TENDERS.

Ashton Keynes, Wilts.—For new Parochial Schools at Ashton Keynes, Wilts. Messrs. Lansdown and Shopland, architects :—

	Tenders No. 1.		Tenders No. 2.
S. Jones	£1411 0 0	....	£1146 0 0
J. Tilling........	1274 5 0	....	1112 7 0
Weeks	1250 10 0	....	1130 10 0
King & Godwin..	1225 0 0	....	1165 0 0
Newcombe	1200 0 0	....	1050 0 0
Dover & Dower ..	1199 0 0	....	1109 0 0
A. Smith........	1119 13 7	....	No tender.
Hinton	1143 18 0	(accepted)	1032 18 0

Burslem.—For alteration of beer vaults in Waterloo-road. Mr. W. Elsby, architect :—

Bennett & Cooke	£432
Sidley	405
Brindley & Critchlow..................	380
Hall	335
Sambrook	260

Hampstead.—For the erection of a villa residence, for Mr. J. Harvey. Mr. W. A. Dixon, architect :—

Eaton & Chapman	£3698
Higgs..................................	3642
Manley & Rogers	3557
Mann..................................	3455
Henshaw	3365
Wicks, Bangs, & Co......................	3290

Burton-on-Trent.—For the erection of twenty-one almshouses, Burton-on-Trent, for the feofees. Mr. Joseph Mitchell, architect. Quantities by Mr. T. T. Green :—

Wade Bros.	£5698
Hunter & Bennett......................	5138
Parker & Son	4705
Maddocks..............................	4686
Wileman	4599
Bowler & Beck	4580
Upton	4521
Hadfield	4520
Smith & Chamberlain....................	4445
Lilly	4443
Mason	3890
Lowe & Sons (accepted)	3850

Clapham.—For stable buildings, enclosure walls, &c., Dudley House, Nightingale-lane, for Mr. H. C. Green. Mr. R. P. Notley, architect :—

Maxwell & Sons	£997 0 0
Notley................................	919 10 0
Eaton & Chapman (accepted)	890 0 0

Hants.—For repairs and other works to Swan Hotel, brewery and premises, at Blackwater, Hants. Mr. E. J. Reynolds, surveyor, Reading :—

Martin, Wells & Co.	£386 0 0
Catchpool	321 10 0
Searle	283 4 0

Kidderminster.—For the waterworks :—

Goodman & Burton........................	£5146 !
Dixon	3630
Everal	3585
Hilton (accepted)	2850 !

Lenton.—For house at Lenton, for Mr. J. Thorpe. Mr. John Collyer, architect :—

Marshall..............................	£612 0 0
Smith	596 16 0
Priestley..............................	580 0 0
Attenborrow..........................	580 0 0
Jelley	569 0 0
Vickers	570 0 0
Slim (accepted)........................	560 0 0

Nottingham.—For the erection of twenty-one villa residences in Nottingham. Messrs. Thomas C. Hine & Son, architects :—

R. Dennett & Co	£14122
D. E. Lynam	13749
T. Fish	13590
F. Mersom..............................	13571
W. Ward	13510
G. Johnson	13300
W. Slim	13137
G. Bell & Son	12925
J. E. Hull	12890
Stevenson & Weston	12816
T. Wood & Son	12553

Somerford Keynes.—For mill and farm buildings at Somerford Keynes, Wilts. Messrs. Lansdown & Shopland, architects :—

Dover & Dower	£1268 0 0
A. Smith	1133 9 3
King & Godwin	1132 0 0
Hinton	1130 0 0
Newcombe	1070 0 0
Jones (accepted)	862 10 0

Swindon.—For five cottages, Swindon, for Mr. E. Lawrance. Messrs. Lansdown & Shopland, architects :—

Harris	£1055 0 0
Newcombe	1000 0 0
Joyce	980 18 4½
Foreshaw	877 15 0
Dover........................	850 0 0
Turvey	850 0 0

Swindon.—For new house, Swindon, for Mr. A. Bull. Messrs. Lansdown & Shopland, architects :—

Harrison	£863 10 0
Light & Smith	860 0 0
Dyer..........................	850 0 0
Jones	765 0 0
Dover	764 0 0
Phillips	748 0 0
Newcombe	726 0 0
Foreshaw......................	602 0 0
Harris (accepted)..............	600 0 0

Swindon.—For new Chapel at Swindon, Wilts. Messrs. Lansdown & Shopland, architects :—

	Original tenders.		Reduced tenders.
Dyer...........	£1030 0 0	....	No tender.
Dover & Dower..	999 0 0	....	No tender
Harris	954 7 6	....	£795 0 0
Smith	948 17 11	....	797 0 0
Newcombe	900 0 0	....	750 0 0
Dover	850 0 0	(accepted)	710 0 0

Swindon.—For new villa at Swindon. Messrs. Lansdown & Shopland, architects :—

Newcombe	£1150
Dover..............................	1100
Barrett (accepted)	1099

Swindon.—For new Schools and teachers' residence, Swindon. Messrs. Lansdown & Shopland, architects :—

	Tenders for schools, &c.		Tenders for additional class-rooms.
Claridge	£2445 0 0	....	£178 0 0
Kimberly	2231 0 0	....	179 0 0
Newcombe..............	2290 0 0	....	163 0 0
Phillips	2199 0 0	....	176 0 0
Smith	2200 0 0	....	130 0 0
Dover	2140 0 0	....	145 0 0
Stephens	2123 0 0	....	160 0 0
Nightingale	2290 0 0		
Harris	2086 17 3	....	148 14 2
King & Godwin (acceptd)	2100 0 0	....	132 0 0

The Potteries.—For house and two cottages, Hanley, for Mr. W. Harding. Messrs. Robt. Scrivener & Son, architects :—

Clewes	£1430
Bailey..............................	1418
Collis & Hudson......................	1380
Harvey	1320
Bennett & Cooke......................	1305
Barlow (accepted)	1230

Stepney.—For labour shed and dead house, Ratcliff Workhouse, for the Guardians of the Stepney Union. Messrs. Arthur & C. Harston, architects :—

Hopewell..............................	£229

Wimbledon.—For the erection of two houses at Wimbledon, for the Rt. Hon. Earl Spencer, K.G. Messrs. Beeston, Son, & Brereton, architects. Quantities by Mr. Barnett :—

Easton Bros.	£3496
Parsons & Townsend	3268
Perry & Co.	3205
Myers	3167
Bracher & Son	3016
Avis & Co.	2904
Adamson & Son........................	2875

Wylde-green, near Birmingham.—For the execution of certain work in the erection of six houses for Mrs. Rowley, exclusive of sundry items. Mr. W. T. Foulkes, Birmingham, architect. Quantities by Mr. W. R. Geen :—

Street	£4138 0
Horsleys..............................	3533 0
Briery	3499 0
Nadens	3400 0
Parkers	3337 9
Ravenscroft	3289 0
Preece	3250 0
Stafford & Brown	3200 0
Surman	3149 0
Steel (accepted)	3145 0

◆

BATH STONE OF BEST QUALITY.

Randell, Saunders, and Company, Limited. Quarrymen and Stone Merchants, Bath. List of Prices at the Quarries and Depots; also cost for Transit to any part of the United Kingdom, furnished on application.

BATH STONE OFFICE,
[Advt.] Corsham, Wilts.

◆

CONTRACTS OPEN FOR BUILDING ESTIMATES.

Dominion of Canada. — Inter-Colonial Railway, Nov. 21.—For the supply of 40,000 tons of Bessemer steel rails, to be delivered in 1871 and 1872, with the necessary quantity of fish-plates and bolts and nuts. Messrs. Morton, Rose, and Co., Bartholomew House, Bartholomew-lane, E.C., London. Messrs. A. Walsh, E. B. Chandler, C. J. Brydges, A. W. McLelan, Commissioners, Ottawa Canada.

Aldeburgh Waterworks Company (Limited), Nov. 1.—For the construction of the works. William Hayward, secretary, North Cottage, Aldeburgh, Saxmundham, Suffolk.

Midland and London and North-Western Railway Companies.—Ashby and Nuneaton Joint Railway, Nov. 15.—For the supply of the following materials, namely—6,700 tons of steel or iron rails (at the option of the joint committee); 3,300 tons chairs, 90 tons of spikes; 60 tons of bolts and nuts; 270 tons of fishing plates; 183,000 tons of oak keys; 366,000 tons of oak tree-nails. James Williams, secretary, Derby.

S. Luke (Middlesex) Nov. 1.—For laying down and constructing 260ft. run, or thereabouts, of 3ft. 3in. by 2ft. 2in., half-brick sewer; 100ft. run, or thereabouts, of 2ft. 6in, one brick barrel sewer; and 275ft. run, or thereabouts, of 18in. pipe sewer. W. W. Hayne, vestry clerk, vestry offices, Vestry Hall, City-road.

Chellaston, Nov. 12.—The proprietors of the Chellaston Plaster Mines, situate at Chellaston, in the county of Derby, invite tenders for the sinking deeper of an existing shaft in the mines.

Halifax Corporation Waterworks, Nov. 14.—Hebden Extensions.—For the Widdop Reservoir and Main Conduit thence to Pecket Well.—Contract No. 7. J. E. Norris, town clerk, Town Hall, Halifax.

Normanton, Nov. 7.—Infant's School.—For building the above school. The vicar, Vicarage, Normanton.

◆

BANKRUPTS.

(TO SURRENDER IN THE COUNTRY).

George Bellamy, S. Leonards-on-Sea, builder, Nov. 5, at Hastings.—Richard John Chapman, Brighton, stone mason, Nov. 1, at Brighton.—William Jacob, Gorleston, builder, Nov. 7, at Great Yarmouth.—Samuel Moore, Clifton, ironmonger, Nov. 1, at Bristol.—George Thomas, Littlehampton, iron and brass founder, Nov. 1, at Brighton.

PUBLIC EXAMINATION.—ACT, 1869.

Nov. 22, J. Brown and C. Leach, Halifax, builders.

LAST EXAMINATION.

Nov. 7, I. Rose, Derby, sawyer.

DIVIDEND MEETINGS.

Nov. 14, T. Smith, Manchester, plumber.—Nov. 15, J. S. Barnsdall, Nottingham, painter.

SCOTCH SEQUESTRATION.

Alexander Cowie, Glasgow and Grangemouth, contractor, Nov. 2, at 12, at the Faculty Hall, Glasgow.

◆

PARTNERSHIPS DISSOLVED.

Heaps and Hesketh, Chorley, plasterers.—Holbrook & Co., Manor-street, Chelsea, ironfounders.—Swallow and Heckels, West Harton, brick and tile manufacturers.—Hiton & Brown, Bolton, ironfounders.—Pierpoint and Hepherd, Warrington, builders.—Raven and Howell, New Basford, builders.—R. and R. Pochin, Leicester, ironmongers.—Frieake and Sons, Mark-lane, engineers.

Breakfast.—Epps's Cocoa.—Grateful and Comforting.—The very agreeable character of this preparation has rendered it a general favourite. The *Civil Service Gazette* remarks :—"By a thorough knowledge of the natural laws which govern the operations of digestion and nutrition, and by a careful application of the fine properties of well-selected cocoa, Mr. Epps has provided our breakfast tables with a delicately flavoured beverage which may save us many heavy doctors' bills." Each packet is labelled—James Epps & Co., Homœopathic Chemists, London.

THE BUILDING NEWS.

LONDON, FRIDAY, NOVEMBER 4, 1870.

TWO MODES OF FENESTRATION.

WHAT is the true method of window construction for modern street architecture? Looking through recent works, we find great variety of treatment and only occasional success. Beginning with the "vernacular," or "Baker-street style," we have the common wide hole in the wall, with a straight arch or lintel over it. Then we have the same thing, perhaps better proportioned, with a pointed relieving arch over the flat one, and a tympanum filled in with brick or stone. And then again we have the lintel omitted, and the aperture extending up to the round, or pointed, or segmental arch which spans it. So much for single lights. But when two or more windows have to be put close together a question arises which needs consideration. Is it best to enclose the two by a single large arch, so that the pier between them may be reduced to a mere mullion, or ought we rather to carry the wall above by the sole means of the smaller arches? In other words, is the more or less developed tracery window of many lights, or the arcade of single lights, the proper thing for our offices and warehouses? Examples of each may be found without looking far. Windows of two lights divided by a shaft (often with a circle pierced through the tympanum) are common in the civil and domestic work of the day. They are found, for instance, in the present Crown Insurance Office in Fleet-street, in the late one in Bridge-street, Blackfriars, in Mr. Jameson's warehouse in Cannon-street, and in many other cases. The second story in the Strand front of Mr. Burges's design for the Law Courts may be remembered as a very beautiful example of their use. But are they ever as beautiful internally as externally? We are speaking of course not of churches and halls, but of many-storied buildings divided by floors. The wall in which they are inserted commonly appears within as a long horizontal strip. The ceiling above is flat, or only broken up by beams or girders. Which harmonises best with these conditions, the arcade or the tracery window? Which fits into the wall-space most perfectly, the long level range of openings or the two or three large pointed arches here and there, cramped in their height by the floor above? In a structure made up of several low stories the windows must necessarily be of moderate height. Instead of 40ft. and 50ft. from floor to ceiling, there is perhaps only 10ft. or 12ft. to deal with. It is a constant problem how to keep the openings from looking squat and dumpy; how to give them grace and elegance of proportion. Which most tends to do so, the single or the double window—that in which each main arch is almost 6ft. wide, or that in which it is less than three? Again, in several recent cases it is hard to see any reason or purpose at all in the dividing shaft and minor arches of these two-light windows. Sometimes a single sash-window fills the entire opening. The mullion and tracery stand clear in front of it, a perfectly objectless piece of scenery as far as the construction is concerned. No wonder that the proprietor occasionally knocks them out as a foolish obstruction to the light. No wonder that the outside public laugh at the architects who first build a window and then put a stone screen outside to darken it. For this is a very different thing from a mediæval tracery window with mullions inserted to support the glass. The mullion, or shaft, in this case supports nothing, except the plate of stone which blocks out the light at top. It is a fine example of the unrealities which still cling to modern Gothic, unrealities which it will throw off if ever its living principles prove strong enough to break through its dead forms.

All compound windows of the class, however, are not chargeable with the absurdity just noticed. Those, for instance, in the Law Courts design, by Mr. Burges, are as thoroughly structural as artistic. Between the two lights is, not a mullion, but a massive pier on which the sash-frames depend just as in ordinary cases. The great arch does not show inside, and can, therefore, rise considerably above the line of ceiling. The proportions, though low, are pleasing, and the construction is reasonable as well as beautiful. Yet even here, though the external effect may well warp the judgment, and make those who come to criticise stay to admire, we cannot regard the interior as quite satisfactory. The heads of the two lights do not come within several feet of the ceiling; the foiled circle above them nearly touches it. To say nothing of the comparative darkness of a room in which the windows are so low down, the whole arrangement almost looks as if the floor above were an afterthought. It is a vertical design cut off abruptly by a flat ceiling; not a design made expressly for a long horizontal strip of wall. There is, indeed, a class of two-light window to which this objection does not apply. When neither the main circle, nor the circle beneath it, appears within, it may agree with a flat ceiling well enough. Yet, even then, the question arises whether, in a simple class of work, this is not rather a complicated mode of proceeding. If we cannot get any light out of the space between the large arch and the two small ones, why have a large arch at all? Why not build in the natural obvious way, with two strong arches and a strong pier or pillar between them? It looks, on the face of it, a more straightforward plan than to put a couple of weak arches first and then a strong one over them to make matters safe. Now this is the system adopted in many Venetian buildings, and it seems to us to be one of the things most worth copying in them. We are not bound to take the Venetian-Gothic style as a whole. We can do without its ogee arches and its queer chimneys, and its billet mouldings. But its system of fenestration for town architecture—a system worked out by the mediæval architects themselves in one of those mediæval towns which come nearest to our modern ones—looks like a hint from our long-past predecessors as to what they would do if they living now. It is a system which has no nonsense about it. There is no putting three arches where two would do, or two where one would do, according to the prevalent fashion in our domestic Gothic. There are no shafts and stonework introduced for the valuable purpose of casting a shadow, and no thin mullions whose frail existence depends on the strength of the sash-frames behind them. There is none of that small, weak, effeminate stuff—that shallow "prettiness," which, in feeble hands, is the one thing which English-Gothic always rushes into. We have columns a foot or more in diameter, instead of the usual "tobacco-pipe shaft," and everything else in proportion. The ranges of windows look as well inside as out: it is plain that the architect designed them for their position, and was not anathematizing the ceiling all the while for interfering with the tops of his arches. The lights are tall and well-shaped; they can go up as high as they ought: if they are fitted with sashes the design is none the worse for it, for there is a great difference in the look of a sash betweeen thin mullions and between stout pillars. In the former case, the vertical lines are not strong enough to overpower the horizontal ones: the meeting-bar is almost as important a feature as the mullion. In the latter case, it is a mere nothing, by comparison; and the projection of the stout column of itself keeps it nearly out of sight. It is part of the essence of the system that these columns or piers *should* be stout; that they should each carry the main thickness of the wall, and not merely, as in a tracery window, the tympanum of the enclosing arch. To do this they cannot be very slender. They must be real columns, capable of doing real work—not mere ornamental shafts. But they are not obliged, in all cases, to carry the wall above by means of an arch: they may do it, in short bearings, by means of a lintel; and this lintel may either have horizontal mouldings only, or mouldings returning vertically on to the capitals of the piers. Both modes may be observed in the Lothbury offices, by Mr. Somers Clarke, the south front of which we regard as one of the most successful examples of Gothic fenestration in London. We have never advocated the Venetian-Gothic style as a whole. We should be very sorry to see it displace the Early French, or even the Early English, as a starting point for modern development. But, as might be expected from the conditions under which it arose, it has some things to teach us which these other styles have not; and this detail of house architecture is one of them. We are not bound down, it seems to say, to short and stumpy tracery windows. We are not obliged to use great pointed arches, running every here and there against the flat ceiling, and looking as if the room were not half high enough. We are not compelled to keep the tops of the lights a yard lower than they ought to be in order that the pierced circle above them may not open into the skirting of the upper floor. Nor need we be tempted, to the great discomfort of our clients, to specify iron casements because sashes look badly between thin mullions. We may construct the work in the most direct and unaffected way, and having put a thoroughly strong arch or lintel to each light, are not necessitated to put another pointed arch over it to make the building "Gothic"; for Gothic, it is plain, can adapt itself to circumstances. If it has one type of window for halls and churches it can produce another for shops and houses. The grander type may well be reserved for grand occasions; for lower purposes, the less ambitious one will, after all, prove the more beautiful.

ITALY AT KENSINGTON.

A FORTNIGHT since we called attention to "Egypt at Sydenham"; we will now say a word or two on Italy at Kensington. A beautiful page, or rather volume, in the history of art, is illustrated by the collections at South Kensington, where the museum is a little Vatican in itself. In point of fact, so supreme is the nation of Michael Angelo and of Raffaelle, that almost whenever we light upon a work which is a charm to the eye and the fancy, we may set it down, without consulting the catalogue, as some monument of Italian genius. And it is gratifying to reflect that all of this wealth is not ancient or mediæval. The moderns claim their trophies, and make good their claim. Thus, among the portraits, are those of Pisano, Cimabue, Fra Angelico, and the rest of the glorious company of painters; but they are generally in Italian glass mosaic, of our own day, by Salviati, whose process is inimitable, unless we compare with it the Minton emblazonments and mouldings. Priceless, in the midst of all, is that jewel of a doubtful artist's labour, called the Cellini Ewer, once belonging to the regalia of France—an object superior, in our estimation, to the celebrated Portland Vase. The double shell of carved sardonyx, the exquisite foot, the enamelled figures and masks, the disposition of the gems, the innocent Cupid on the handle, the Andromeda figure in front, lying like Nature on a bed of gold, rubies, and diamonds, constitute the perfection of grace—a companion to Ascanio's Lily. If challenged to declare what triumph of human Art is without a flaw, we should unhesitatingly indicate the Cellini Ewer—a poem in conception and in execution a gem. The chalices, monstrances, and ostensoirs of an early period, though displaying invention, are rude ; but a marvellous sumptuousness of luxury is suggested by the Italian harpsichords and spinets of the sixteenth century, made of pear-wood, sculptured, and literally encrusted with ebony, ivory, lapis-lazuli, and rare marbles, besides borders and stars of jewelling. From these minute and delicate treasures we turn to the Old Testament of Ghiberti, from the Baptistry of Florence ; and our surprise can never cease at the patient toil—the love, in truth—bestowed by those old artists upon their unmercenary tasks. Look at the Porta di San Rameri, by the Pisan Bonnano. You might think that the man was only born to build a gate. It is the Scripture in bronze. Then those Roman, Venetian, and Tuscan mosaics, wealthy and yet dainty of tint, and surpassing all the boasted Oriental panellings, excepting, perhaps, in material. Baccio d'Agnolo's cantoria, or singing gallery, in marble, from one of the churches which cluster in Florence, absolutely transcends the Classic ideal—it is at once so magnificent and so pure. So we pass amid this Italian splendour : the tribune of Santa Chiara ; Robbia's enamelled terra-cotta ; the antique fountains from Florence and Venice ; and Maiano's and Settignano's altar-pieces, glowing with Italy. Italy, indeed, is alive and bright, beyond all other countries, at South Kensington. There is the famous Cupid of Angelo, wrought when he was only twenty-four years old, and the still more remarkable, though unfinished, statuette of S. Sebastian ; an example of his "recorded practice of cutting his works at once from the marble, without availing himself of the mechanical appliances in general use among sculptors for chiselling out in marble a figure previously modelled in clay." But, delaying for a moment upon this topic, we may observe that, without the slightest remorse, not only Michael Angelo, but many other artists, are held responsible by the catalogue makers of South Kensington (what an incorrigible race these catalogue-makers are !) for innumerable barbarities which they never perpetrated : also, that the jargon of this "marble mart" wants correction in every way. When shall we be rid of the slang about "Greco-Roman" style ? The style is either Greek or it is Roman ; or, if not, it is neither, and has been bastardized. Continuing our tour of the marbles, it is impossible not to linger before the marble shrine from Fiesole, and Donatello's quaint yet powerful sepulchral scene in the history of Christ. The head of the Saviour is nobly imagined. But however pleasant these lingerings may be, they must not detain us too long, or we shall exhaust our whole study on the Pisan Baptistry, the monument of Pope Julius, the Cellini bronzes, the Moses of Michael Angelo, and the peculiar flat relief first introduced into art by Donatello. It is remarkable that the Italians—perhaps on account of their possessing marble (and a similar remark applies to the modern, though not to the ancient, Greeks) have never cared much for ivory-carving, which is held in such high repute throughout Germany and France. But they have always been, especially the Tuscans and the Viennese, superb enamellers, and their translucid enamels in relief, illustrated so brilliantly in the great Shrine of Orvieto, more than 500 years old, defy comparison. Glass, indeed, in Italian hands, became a material of art, though the days have gone by when emperors and kings concontended for the largest collection of Murano goblets. Some are here, in company with a singular variety of other types :—The massive enamelled works of Venice in her earlier time, Gothic of shape and sumptuous of colour—blue, green, and clouded purple—though white prevails, as affording the finest surface for gilding, which emblazons it with armorial bearings and arabesques, contrasted with enamel in opaque. Then, thin blown drinking cups and horns, so graceful in form and yet so totally unlike one another, golden-tinted. Later than these are the vessels of Latticinio, or filagree glass, known to the ancients, in which threads of opaque white and coloured glass are incorporated in the transparent body of the vessel, and these, by various methods of manipulation, are twisted or woven in regular spiral or reticulated patterns, producing in some specimens a kind of network of delicate lines spread through the piece. When these lines cross each other we have the Vitro di Trina or lacework glass. "Sometimes the lofty stem of a wineglass is formed of an elaborately-involved rod of various colours, resembling a serpent." But there was no limit to the ingenuity and fancy of those unrivalled artificers, with their crystal stars and crosses, and frosted and crackled oddities, and their Avanturine, produced by mingling metallic filings or particles of leaf-gold with the substance of the glass, where they hang like flies in amber. The people at Murano imitate these processes, yet they have not re-discovered the original secret. It is said that they borrowed it from Germany. The supposition, however, is sustained by no evidence. On the contrary, the Venetian ware has more tenuity, clearness, and lightness than even the richest of the famous ruby glass once manufactured in Bohemia. The true ruby lustre—iridescent and prismatic—such as once adorned the cabinets of princes, from the potteries of Faenza, Gubbio, Pesaro, Urbino, and Castel Durante, can no longer be produced. The knowledge of it has been extinct since the days of Sanzio, from whom the term "Raphael ware" was derived, though for no reason that history affords us. The name most celebrated in the category is that of the "Maestro" Georgio Andreoli, who died in 1552 in a chamber walled with majolica copied from the Moorish palaces in Spain. But the Italians, although, as we have noticed, they command an abundance of that white and pure stone which sculptors love, and which has been chosen in all ages to represent all goddesses and nymphs, from Juno the imperial to Psyche and Hebe, the girls of the Olympian Mount, possess also a wealth for art purposes in their soil itself. In the year 1400 was born the man who either unearthed some forgotten craft or invented a new one. A goldsmith by trade, an artist in taste, he grew impatient over bronze and marble, because his imagination was too opulent and rapid for substances so hard and so costly. Hence terra-cotta, "literally cooked earth—*i. e.*, burnt clay," coated with opaque enamel. His first work in this material was produced about the year 1438, in the Cathedral of Florence. His son, Andrea, and his four grandsons carried on the art, but with them its mystery died. We have imitators, but none who can tell us how the genuine Della Robbia ware was wrought. With respect to another class of pottery, known as Faience de Henri Deux, however, its secret, long lost, has been found again, so they say ; but not more than fifty undoubted examples are known to exist. There is no enamel on them, only a white body, covered by a thin and transparent glaze. The last important specimen in the market—a trifle light as air—was sold for 1,100 guineas ! There are, of course, spurious "originals" in all the curiosity shops of Europe ; but what of that ? Who, in the apotheosis of speculation, has not a real Rubens or Titian, a cupboard full of indubitable Dresden, and some of that delicious majolica, made of very modern clay, which used to be purchased at the great Doccia works in Tuscany ? To our positive knowledge, Great Britain, France, Belgium, and Prussia each have the bullet which killed General Picton. Then why not the true Abruzzi, white and blue ? Perhaps it is equally pretty, possibly prettier ; still we are not inclined to despise the love which is felt for the primal work of the artist as distinguished from that of the mere modellist and copier. That magnificent medallion, 11ft. in diameter, and bearing the arms and emblems of René, King of Anjou, was hung, during four centuries, upon a wall exposed to every influence of the atmosphere. It did not suffer in the smallest degree. The date of the altar-piece near it, also of Della Robbia ware, is uncertain ; as is, too, the authorship of the Magi, the twelve enamelled terra-cottas symbolising the months of the year, and the Virgin and Child, in Della Robbia, attributed to the inventor himself or his son. How justified this sort of dubiousness is may be inferred from the fact that the Administration of the Louvre, in 1868, bought, as an original work of the fifteenth century, a bust by Bastianini, who died only last year. So of the brass and iron candelabra, cressets, balconies, grilles, braziers, and firedogs, assigned, at a guess, to various names, though in certain instances Italian, has evidently been mistaken for Rhodian. The Plateau, with a portrait of Pietro Perugino, and the several pieces inscribed by "Maestro Georgio," are, however, unquestionable. No pretence is affected concerning the the renowned Martelli Bronze, or mirror-cover, the work of Donatello, who made it for the Martelli family in the epoch of Italian wealth, and who little dreamed that some 400 years after his death it would be sold to an English curiosity collector for £650. The annals of these treasures, indeed, could they be traced, would be exceedingly romantic. Near to the Martelli Bronze is a metallic mirror, in a lofty and elaborate stand of steel, damascened in gold and silver with wonderful art. It was made at Milan—at what cost ?—for a Duke of Savoy. Why was it sold, and who are the Dukes of Savoy ? Antique family jewels, the peasant ornaments of Etruria, household portraits, an immensity of objects robbed away in war and revolution, and handed from mart to mart, find a depository at South Kensington. There is one truth connected with this which should be noticed Formerly, it was the pious custom of illustrious families to preserve as heir-looms libraries and picture galleries ; now, before the amasser of them is cold in his grave, we hear the knock of the hammer. The love's labour of a lifetime is lost ; the "originals" go to Wardour-street, and the "unique copies" are hawked about the bookstalls. Now, why else those pearls, which must once have adorned, or been adorned by, the neck of some Princess, and upon which M. Michelet would have written a rapturous volume ? Why that incomparable Aquamarine, the largest in the world, which sparkled once in the sword-hilt of a Neapolitan king ? We can understand the Pectoral Cross—a villainous appellation to bestow upon a thing so beautiful—because it is a loan from Mr. Hope, whose generosity in this matter has been above praise, and who makes an use so admirable of his prosperity. But we cannot comprehend the spirit in which rich families, the families of kings, royal princes, dukes, and the rest of the salt of the earth, appeal upon the death of the head of the house to the pawnbroker or the auctioneer. After this indulgence in indignation, we enter the picture galleries. They are radiant with Italian charms : the nine remnant cartoons of Raffaelle ; copies from the woollen, silken, and golden tapestries in the Vatican ; rescued relics from the lumber-room at Whitehall ; plunder—of a precious kind—from Hampton Court ; works of an almost sacred genius. The eye never tires of them. "Ananias Dying," "Paul Preaching at Athens," the "Beautiful Gate," "The Holy Families," that gallery of "Madonnas," "The Draught of Fishes," and the exquisite "Garden-Girl," which, in tenderness, softness, and daintiness of touch, has never been approached except, perhaps, by Meissonier. Not much attention is due to the paintings, "chiefly selected as affording illustrations of costumes," which hang about the lobby and staircase walls ; nor, unless it be heresy to hint it, to Domenichino's bold daub, the "Conversion of S. Jerome," while as for the Perugino, originally done in fresco for an Italian church, it has been spoiled by the transfer to canvas. Not so with the frescoes from the Lower Church of San Clemente, in Rome. They had been buried for nearly eight hundred years, and were only recently discovered. Copies were made of them on the spot, expressly for South Kensington, and the result reflects high credit on the artist. There are also some striking paintings, and figures, and landscapes in gilt on Italian leather, the work of which, however, is far excelled by the French. Yet, upon the whole, if we would signalise any classes in the museum as peculiarly worth studying, we should indicate the the Italian. It is rich in architecture, in sculpture, in colour, in fine and choice fabric, in thought applied to art, in a conservatism, so to speak, and it is, in fact, a book of pictures, each illuminated by genius. To read it is to be enlightened upon ages of human power and progress, or, as an Italian himself said, to look down the most glorious vistas of the past by the light of sunken suns.

THE ARCHITECTURAL TREATMENT OF BRICKWORK.

When Charles the Second decreed that the rebuilding of London should take place in materials not liable to be destroyed by fire, he did not possibly contemplate the changes he would bring about in the architectural character of his metropolis. The mediæval wooden buildings, and the quaint half-timbered houses which had been erected under the Elizabethan revival of Classic architecture, had now at once to be replaced by structures in brick or stone. And, thanks to the fire, we lost by a stroke of the pen the picturesqueness which seems to have been peculiar to our wooden architecture, and our forefathers were constrained to adopt novel methods of building in fireproof materials. If we can imagine a body with such authority nowadays as the Metropolitan Board of Works determining, say from January 1, 1871, that no buildings in brick or stone should be commenced in London, we can conceive what an impulse would be given to iron and timber construction; and in 1666, with an entire city of 13,000 houses to rebuild, the demand for architects in these new materials must have been enormous. But the law which teaches us that with the demand must come the supply, held good after the Fire of London, and it soon became evident that the new London was to be a brick city. Indeed, it could hardly have been otherwise; the means of transporting stone were few and limited, and good building stone is nowhere found in the immediate vicinity of the metropolis. Moreover, there was no time to be lost; the chroniclers of that day, Evelyn and Pepys, describe the wretched straits to which the unfortunate citizens were reduced, camping about in tents in all the open spaces round London, and huddled together in the public buildings which had escaped destruction. They did not then doubtless pay much attention to the architecture or to the exterior of their houses, and the revival which was working such wonders in Italy played very small part in the rebuilding of London. Of course, with the masterpieces of Wren and Inigo Jones before us, the Renaissance cannot be said to have been entirely neglected in this country, but, with the exception of the churches and a few of the mansions of the nobility, Classic tradition, at the very period of all others when it had its most important chance, failed miserably to make an impression upon our street architecture. The reasons for this failure will have to be sought for probably in the materials, for it seems an unquestionable fact that the massiveness and grandeur of Classic architecture cannot be translated into brickwork; it essentially requires a stone treatment—or shall we say a stucco one? Luckily that vile sham was then unknown, and we were saved a stucco rival of Rome or Florence, for there is no knowing what Wren might have been called upon to do had Parker or Austin flourished in 1666.

The real cause of the adoption of the "brick-wall-with-holes-in-it" style in London was of course that this was the simplest and cheapest way of sticking square bricks together, and even if we had had designers and manufacturers who could have furnished our citizens with the rich and varied terra-cottas which were then in use in Northern Italy, we question if their wares would have commanded any sale. But it is of no use speculating what might have been the case, we only know what did happen, and we can but regret that for nearly 150 years our street architecture remained devoid of every characteristic. The age which produced Kensington Palace, Marlborough House, and Great Queen-street was only better than that which gave us Gower-street and Mayfair in that the bricks were better made, and red instead of grey, as the colour is now called—dingy black would be a fairer term to express the hue of modern brickwork. The red colour of the eighteenth century bricks was due, as is well known, to their being burnt with wood in close kilns, instead of in clamps with breeze, as is now practised. The nineteenth century was heralded in with the discovery of stucco, and stucco has probably wrought almost as important a change in the aspect of London as did the Great Fire. To stucco we may attribute all the evils to which architecture is liable. These may be briefly described as bad designs, bad materials, and bad construction, and the only comfort in contemplating a row of stuccoed houses lies in the fact that they are so deficient in durability that few, if any, of them will outlast the ninety-nine years of their leases. The introduction of stucco may, in fact, be regarded as the commencement of the third epoch of London street architecture; and as the masterpieces of stucco, we cannot do better than refer to the works of Nash, who was its High Priest. In Regent-street, which still not unjustly claims to be the finest street in London, we see, or rather we don't see, brickwork revelling in Classic attire, and the terraces overlooking Regent's Park are well-known examples of the transforming power of Parker's cement, as it was at first called. In spite of all our progress in other matters, we are still sticking in the cement period of our architecture, and we can only anticipate by contrast with our contempt of the plain brick-wall treatment (which still, by the way, drags on a lingering existence in remote suburbs) what will be the feelings of the architects of the next generation when they reflect upon our protracted thraldom to this disgraceful sham. With all the grand new squares at South Kensington to build,—for with the vast extension of London northwards and westwards we still go on in the old jog-trot routine of stucco squares and stuccoed semi-detached villas—may we indeed dare to hail the Grosvenor mansions as a sign of better times coming, as a dove of promise, as an indication that the nobility and gentry will dare to enshrine themselves behind any other material than stucco? We hope so! We verily will try to persuade ourselves and our readers, that after 70 years of pseudo-Classic civilisation, we are going to return to something genuine again and to allow what we have for some time been showing inside our churches to be seen outside our houses—namely, plain honest brick. If it were not for very joy we should be tempted to find many faults with the Westminster improvements, and there are to our mind many forms of brickwork better adapted to our street architecture than the pretentious buildings springing up on the outskirts of Belgravia. But we must be contented with small mercies and hope for better times in the future. At the Kensington Museum, and latterly at the Royal Albert Hall, we get entirely another plan of dealing with brickwork, and the attempt to decorate brick buildings solely with terra-cotta constitutes to our mind the dawn of a fourth period in London architecture. If our readers smile at our selection of a few isolated buildings as the nucleus of a style which is to influence the entire architecture of our metropolis, we can but remind them of the insensible way in which this very South Kensington influence has gradually become apparent throughout the country. If in matters of art education we are compelled to admit that we have derived assistance from the existence of the Department of Science and Art, why should we scruple to learn what we can in matters of architecture from the band of art students and art workmen who have received their training at the hands of this institution? But while South Kensington must be allowed to have led the way to the successful employment of terra-cotta, we can also point to the works of Mr. Barry, who has demonstrated in the most satisfactory manner at Dulwich College that this material can be employed with effect; and there are, if we cared to enumerate them, other buildings, both executed and in progress, which testify to the growing appreciation of this material for building.

Now when we undertook to write upon the treatment of brickwork, we had in view the possibility of choosing either one or the other of the following alternatives—either, firstly, to consider brick (which, as we have shown, is of necessity the building material *par excellence* of London) in the light of a mere constructive necessity, and to demonstrate that although we cannot avoid it, we may contrive to veil it from the eye by means of some decorative sham, such as ashlaring or stucco—or, secondly, to look upon brick as a true building material, which should be so considered in the design and so disposed in the building, as to tell as brickwork, and as such to form a part of the architecture. We have shown the reasons for the adoption of brickwork in London, and we have pointed out that brick, and brick alone, was employed for the majority of our buildings during 150 years. We have seen that when stucco was invented, our architecture was so modified that the natura material, brick, was constrained to retreat behind a hideous veil of that wretched sham, through which, however, its constant tendency is, and ever has been, to show its familiar face, disfigured and deformed by all the unsightliness which bad material and bad workmanship can achieve. And now, in conclusion, we would hail with joy the movement we think we can see the signs of, and which we firmly believe will soon be very apparent, in favour of again employing plain honest brickwork for the façades of our houses and public buildings. We have endeavoured to prove that the reason for the ugliness of London is the want of a style of architecture suited to the material, and capable of dealing with the sizes, forms, and colour of bricks. After two centuries wasted in hopeless struggles after this style, we believe that neither in Gothic nor in Classic art can these exact requirements be fulfilled, but that to build truly in London we must begin with a brick 9 × 4½ × 3, and on this form such modifications of the received traditions of order and proportion as are capable of being executed in the materials with which we are dealing. Every one will readily admit that this is the common-sense method of treating brickwork, and for the purposes of enrichment bricks in the form of terra-cotta may receive any amount of decoration. In the best period of all architecture we find the enrichments wrought in the same materials as the remainder of the building, marble for marble, stone for stone, terra-cotta for bricks. With this appeal to precedent we will leave our readers to form their own opinions upon the correctness of the principles involved in the revival of brick architecture which is now taking place in London, and we can only hope that the conclusions at which we have arrived will be justified by the future of London architecture, and that we may at no distant period revert with satisfaction to the views we have now expounded.

SOUTH KENSINGTON LOAN COLLECTIONS.

WE resume this week a notice of the many fine and interesting works of art which have been lent this year to the Science and Art Department. In Lord Elcho's collection especially, there are some excellent portraits, both for the celebrity of the persons represented and for the power and goodness of execution. One of the most important is Paris Bordone's splendid picture of "Palma's Daughter." This is something more than a mere portrait. There is a curious dazed expression upon the young lady's face, apparently showing that she does not much like reclining for a model to the painter. It is, however, in every way a fine specimen of the master. This artist, who studied under, and in portraiture rivalled Titian, was, like Lucas Van Leyden and some others, a wonderful example of early genius. He is said to have executed important pictures when only twenty years of age. Another capital portrait, though somewhat hard, is that of Tintoretto, by himself, painted upon marble, which, doubtless, partly accounts for the hardness we speak of. There are also several of unknown persons; one by Pantomio, of a gentleman, is as fine as one often sees. The power and dignity of this portrait are admirable. Close to this there are several nice things of the kind; among them a very graceful head of a lady, by Parmegiano; but in interest no portrait in the place is before Mr. Layard's well-known one of "Mahomet II.," the great emperor of the Ottomans, who captured Constantinople in the year 1453. The picture has a long inscription, which fixes, for certain, the painter and his subject. Gentile Bellini, the eldest son of Jacopo Bellini, of Venice, at the instance of this Mahomet, visited the court of the Sultan, a fact which, no doubt, influenced his costumes and manner. He was the first painter we know who introduced such oriental costumes into his paintings. One good example of this style of treatment is exhibited at the old Exhibition building. While writing of the portraits, we must not omit the delightful portrait of the "Contessina a Mattei," in the Marquis of Westminster's collection, by Andrea del Sarto. He is said to have studied much the works of Massaccio, and to have had a wonderful power of copying. This picture, though much more advanced in handling and softer in touch, reminds one somewhat of the speaking portraits of that master. The well-known Velasquez portrait of the little gentleman, the "Prince of Asturias," on a big Flemish horse in the court of the Manege, also in the Marquis's collection, is too well known to need much comment; those who have not seen it before should notice the character and force of the figures in the background. Besides the specimens of the early masters already mentioned, the visitor should notice two small but delicate bits of Andrea Mantegna. It is a pity they have become so black. More ambitious, and wonderfully fresh in colour, possessing great sweetness and some dignity, is the triptych attributed to Vivarini. The central compartment represents Madonna crowned by angels, with her divine son on her lap, who is in the act of blessing a kneeling nun, probably the lady, as in the case of the many S. Catherines, in whose memory the picture was painted; the wings are divided into six portions, each containing some event in our Lord's life. This artist is said to resemble Bellini, but he is much more archaic and inferior to him in every way; his drawing very incorrect. In the *pieta*, for example, the foreshortening of the dead Saviour is almost ludicrous. Above this is a circular painting, by G. A. Razzi, commonly called "Il Sodoma," of about the same size and of the same subject as the Botticelli on the other side of the screen, but entirely inferior to it, especially in the drawing of the extremities and want of religious feeling. On the wall opposite is a singularly pretty but somewhat feeble picture of the "Virgin and Sleeping Child."

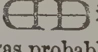
The Venetian school is well represented, Titian's "S. Sebastian," with a small finished study of it, leading the way. There is some marvellous painting in these, painful though they are. The perfect repose of the now lifeless and hanging figure is striking. By his pupils we have an important example of Andrea Sciavone, "The Birth of Jupiter." This picture is wonderfully rich in colouring, but the outlines are very dark and indistinct. Nothing, however, can be more charming than the infant god himself. There is a mannerism about the whole, which is also noticeable in his greater fellow-pupil, Tintoretto, by whom are some good examples. A small one of the "Marriage Feast at Cana in Galilee" is a fair specimen, with all its defects of affectation and virtue of colour, grace and elegance. There is much to admire in the bold tempera painting of the Three Graces, life size, by Pellagrini. The outline is sharply drawn in the wet plaster with some tool, somewhat like the process employed on a smaller scale by the early Greek artists. There are several paintings attributed to Correggio. One of the "Holy Family," unfinished, is very interesting, showing how an artist of this celebrity went to work. At first sight one might fancy it was an original painting that had been partially destroyed, but upon close examination we have no doubt that it is what it is said to be, an unfinished painting by this great master. As we get lower down we must notice two spirited sketches, by Romney; the laughing girl reminds us much of the slight but fascinating sketch of "Lady Hamilton" in the National Collection. Gainsborough's sketch of "Lady Sefton" is also interesting, crisp, and true to nature; every touch tells.

Of our own day, Lord Elcho exhibits two fine water-colours by W. Hunt; one is a capital fruit-piece, painted with a truth that none but he in these times has acquired, and a very high-finished and characteristic portrait of a monk carrying a big book bound in pigskin, with latten clasps and corners; the texture is simply marvellous, and the colours bid fair to rival any executed in oil for durability. This excellent example of this favourite artist is unexceptionable both for subject and execution.

We now turn to some of the recent additions to the loan and other collections of art. We have noticed already the interesting collection just purchased at Saragossa. The *Times* and other papers spoke of the collection as containing specimens of art from time immemorial. This, we fancy, is a mere mode of talking. Nothing was bought for South Kensington earlier than the seventeenth century, which we trust would not have been the case if fine thirteenth and fourteenth, or even fifteenth, century work was to be had. In addition to what we said last week, we would draw attention to the very skilful hand-work exhibited in the beautiful pelican already noticed, and the exquisite chasing of the medallions in the crystal pendant given by Louis XIII. Of the more modern goldwork, nothing approaches the mounting of the diamond breast-ornament given by the Marquesa de la Puebla. We have seldom seen such skilful and delicate scrollwork. Of course with our idea of setting precious stones, so as simply to display the stones themselves, this method would not find favour. We only speak of the piece as a specimen of exquisite hand-work, and we might add of the artistic utilization of small and uncostly stones. In some of the other crystal pendants there is a process well worth imitating—that of placing finely-coloured miniature painting under the crystal. These specimens are only fair examples of the art. There is, however, a magnificent instance of it in the Ashmolean Museum at Oxford, equal in effect to the brightest enamel.

Bearing a fair comparison to these Spanish offerings are some similar specimens of German and French work in the great hall, lent by "A Gentleman." It seems to us a pity that a gentleman possessing such beautiful works of art as those exhibited by him should not have allowed his name to be appended. The "Incredulity of S. Thomas" and "Resurrection" are beautiful examples of enamelled figure-work. In addition to these fine jewels, some good rings and early watches, this gentleman exhibits very choice specimens of French and English furniture, the painted satin-wood of the last century, as good as any to be seen, in perfect preservation. He also shows—unless, indeed, there are two gentlemen—a magnificent clock with charming silver mounts, with tortoiseshell case inlaid in oriental figures with mother-of-pearl and enamels; an early instance of the imitation of oriental patterns so prevalent in the early porcelain.

His finest specimen, however, of precious furniture is an exquisite cabinet of very light ebony framing of very pure and chaste design, inlaid with plaques and panels of the choicest agates and other pebbles. Small as it is, it almost rivals the celebrated spinet bought at the Paris Exhibition. But the most important part of this collection is the metal-work. Some of his specimens of this art are truly marvellous. There are many excellent; all are worth careful examination and study. Of the smaller pieces the following are worthy of notice:—A beautiful little miniature hourglass. It is only a toy, and probably, that is judging from an early one we have, not of much use in measuring time, but the patterns in damascene work are exquisite, equal to any oriental specimen. Of about the same date is a beautiful piece of chased metal, seemingly the upper part of a sword scabbard. The expense of executing such work as this would preclude its use at the present day, except where funds were practically unlimited; but it is a sad sign of the present revival throughout Europe that, notwithstanding the greater beauty and scope of the styles revived, scarcely anything approaching, either in design or skilfulness of execution, the best Cinque Cento works has been attempted, most of our Gothic architects having actually repudiated many useful and beautiful processes of working in metal. A curious purse-snap is also noteworthy for the dexterity with which it is worked; the design, however, is poor. A set of knives of the fifteenth century have beautifully excised handles, the floral and armorial ornaments being filled in with translucent enamel of an excellent colour; the greens and reds are very good. There is no mode of ornament more worthy of imitation for a hundred uses than this, and we are glad to see that it has been successfully done in several instances. The gems of the collection are two very choice shields of the finest wrought-iron richly damascened. One appears to have been buried, and so is a good deal corroded, but not so much so as to prevent its design from being perfectly intelligible; the cantia, which is hammered up to a considerable height, and afterwards chased and inlaid, represents S. George and the Dragon, the latter having come within a very inconvenient distance of the fair daughter of the King of Egypt. The border is divided by circular medallions of great warriors, male and female—Judith, David, Hercules, the intervening spaces being filled in with very elaborate and capital arabesque ornaments in gold. It is said to be of the fifteenth century, though it seems to us clear of the sixteenth. The shape is circular; when perfect it probably was somewhat similar, but equal to the Queen's great shield.

Far finer in design and execution, as well as in condition, which is as excellent as the Cellini one, is a grand oval shield with the monogram  inscribed upon it in gold, so that it was probably made for Henry II. of France, who so often coupled his H with the

D of Diana of Poitiers. The modelling here is as good as in any painting of the period. The grand scene is the delivery of the keys of a city by a queen; a cupid bears an olive branch before her, and another hovers over holding the crown of victory over the conqueror. Victory, with a trumpet in her hand, seems to bless him as he advances, while the city in the back towers in majesty, palace and town rising one above the other. The subject may be the submission of Cleopatra to Julius Cæsar. We have never seen anything finer than the figure of Victory. The drapery is simply marvellous; such variety of patterns, and all exquisitely and tastefully wrought; such ease and grace is shown that one can hardly believe that the material is so stubborn a one as iron. The border is scarcely as pure in design as that of the circular shield, though in boldness and execution it far surpasses it. The masks are of extreme force and character. If any one wants to see how delicately iron can be worked by a skilful artist, he cannot do better than study the details of the dress of the one figure above mentioned.

It is not a little curious that there is another choice work of art now exhibiting which also has the Diana monogram, and is supposed to have been her own hand-mirror, presented by the King. The frame is of ivory, of perfect execution, of the best taste of the period. From what we have written, we need not say that the Museum will well repay a visit. Seldom have its walls and cases been richer in really fine works.

◆

THE WINTER EXHIBITION OF THE DUDLEY GALLERY.

SATURDAY—the private view of the Dudley Gallery—being very wet, there was, comparatively speaking, but a small number of visitors. The rain may have had a depressing effect—certainly a leaden sky is one of the worst under which to view pictures,—but we cannot congratulate the committee upon the exhibition's being quite up to its usual mark. The collection is designedly one for cabinet pictures, but a cabinet picture should be a gem, not a pot-boiler, or, taken at its lowest conception, the study for a larger work, giving the cream of the painter's first idea of a subject. Hitherto the Dudley has been the youngest and favourite child among exhibitions, and we regret that it should in any way lose its usual prestige. Mr. Watts contributes three pictures; one very fine one, "Love and Death," No. 108, occupies a central position at the end of the room. There is an overwhelming force in the figure of Death against which the smaller one of Love seems hardly able to contend. With all its talent this picture partakes largely of Mr. Watts's peculiar mannerism. Another by the same artist, No. 120, "From my Studio Window," is an excellent study of a pine tree, and deserves attention from its fine colour. Mr. Mason's landscape is a good Mason; to add, as he does, that it is from Staffordshire is beside the mark; he paints white very cleverly, particularly a white goose or horse, or a child's white cap against the evening sky, and the first time we see it it enchants us, but the repetition of the trick wearies and palls upon us. Mr. Briton Riviere sends two capital works, the puppy in No. 128, "Conscience," is so ludicrously ashamed of himself, and the action is full of humour. The same feeling of humour is still more apparent in Mr. Riviere's larger work, "For Sale," No. 168, which is also well and solidly painted. "The Thames at Limehouse," No. 14, by C. Napier Henry, is full of colour, and the water is excellently rendered; we prefer it to Mr. Henry's other picture, "St. Ives—the Boats at Twilight," No. 45, in which the river is somewhat muddy and the sky heavy; there is, however, great individuality about both paintings. No. 150, "St. Clement," by A. Legros, is a very inferior work, the saint has a particularly disagreeable expression, and seems carved out of wood. The only part of the picture worth studying is the hands; they are carefully wrought out. No. 182, "The Sliding Panel," by Alfred H. Tourrier, is very well and conscientiously painted; the man's action is good, it is finished without being laborious, and the colouring is remarkably harmonious. Mr. Yeames' picture, "Maggie's Secret," No. 161, will not add to his reputation; the colour of the sky as seen through the window is so crude and out of key that it grates upon the eye. Mr. Poynter's portrait of a little girl, No. 204, is another unfortunate picture; it is doubtless an excellent likeness, but it is not a thing of beauty or a work of art. Mr. J. E. Hodgson contributes one of his Eastern scenes, "A Pastoral Symphony," No. 179; it is given with force, and is replete with life; it is an excellent bit of painting, and decidedly one of the best works in the exhibition. No. 159, "Black Rabbit Inn, Arundel," by Harry Goodwin, is a nice bit of colour, and the artist in painting a scene has also meritoriously endeavoured after an effect. It is a pity that there is so much foreground; the picture would have been much better, both in size and shape, if two inches had been taken off the canvas in front. Mr. A. B. Donaldson's picture, No. 78, "The Return of the Patron Saints to Venice," is effective in colouring, though we think the strength of the moonlight somewhat exaggerated; but enthusiasm in colour is pardonable in a young painter. Mr. H. W. B. Davis sends two little moonlight landscapes, most delicious in effect and very true to nature. Who has not walked out on such evenings? No. 32, "Night," a study, and No. 139, "A Bright Night." No. 152, "An Art Critic," by Claude Calthorpe, is undeniably clever, but so vulgar in feeling that all pleasure in it as a work of art is quite lost. Miss Starr's "Undine," No. 60, is a very poor performance, so evidently feminine. Why condescend to such a bit of puerile and mawkish sentimentality, when she can paint so much better? We are inclined to think that some of the ladies' pictures in this collection must have been placed on account of their titles, for the valuable effect of a bit of poetry in the catalogue; take for instance this one, qualifying a decidedly commonplace young man with somewhat sleepy eyes, "The Mild-eyed melancholy Lotus-Eater," by Ellen Partridge. Mr. Walton sends three good landscapes, truthful bits of Surrey nature, painted with his usual facile execution. His large work, "The Lowly Valley," No. 53, has much merit, and has great breadth and simplicity of treatment; the colour is excellent. No. 74, "Near Midhurst, Sussex," is one of the best of Mr. Ditchfield's pictures in this gallery; they are all painted with true art feeling; the painter evidently sees into the poetry of nature; he is, however, a little too fond of painting a grey day. Mr. Heywood Hardy has succeeded very well in grouping the heads of four dogs on one canvas, as in No. 55, and they appear to us to be very characteristic portraits; his love, however, is plainly for landscape art. No. 62, "A Shady Spot," is painted as if he were fond of the place; it is excellently rendered; mark particularly the effect of sunlight on the grass pasture. The committee have been guilty of favouritism in placing No. 131, "Our Country Garden," by C. J. Lewis, in so prominent a position; it is a picture with nothing to recommend it; the artist could do so much better; it is a meretricious painting, there is no repose about it, and the colouring is most gaudy and flaring. We cannot speak favourably of "Cosette," No. 46, by G. H. Boughton; the woman's face is so hard, and the painting of the dress badly managed. No. 126, "The Junction of the Thames and Loddon," by Harry Leslie, is very nicely painted, as is also No. 176, "Erith Church," by the same artist. The landscapes by A. H. Grace, have much merit, and are worth looking at; particularly No. 97, "An Old English Homestead." In fact, the exhibition is not devoid of landscapes and works of merit, but it has its reputation to keep up, and it must look to something beyond this if it wishes to take its place among the many fresh galleries now opening all around it. The Dudley began well, painters of position were sponsors to it, and upheld its first exhibitions; it opened with éclat; therefore, unless it is sustained by more than usual efforts after pictures with subjects, after a better class of portraits, and landscapes as a rule decidedly above the range of dealers' pictures, the greater will be its fall. We do not say that it is declining, but looking forward to the heavy competition against which it has to fight, we recommend an earnest striving after better things. Half a dozen pictures that leave a mark upon the memory will make an exhibition when even a more than average equality of work is forgotten as soon as our visit to the Gallery is over.

◆

COMPETITIONS.

Memorial to the late Marquis of Westminster.—A public meeting was held at the Town-Hall, Shaftesbury, on Saturday evening last, to take into consideration the form that the proposed memorial to the late Marquis of Westminster should take. It had been originally determined to erect a cottage hospital, and a considerable sum had been raised in furtherance of that object. Subsequently it was suggested that the memorial should take the form of a middle-class school. This meeting was called to decide the question, and it was voted by a large majority that a cottage hospital, with accommodation for six beds, should be built, and it was resolved to advertise for plans and building estimates.

The Wednesbury Town-Hall Competition.—Mr. G. B Nichols and Mr. Samuel Horton, the authors of the second and third premiated designs, have sent the following letter to the local journal:—"On reading the report in the Birmingham *Daily Post* of Wednesday, the 26th inst., referring to the selection of the design for the proposed Town-Hall, we were surprised to see it reported as spoken of by the chairman that one of the selected designs bore the name of 'Loxton Brothers' in one corner. We merely write to ask the chairman of the meeting if such is correct. If so, it is not only unfair, but unjust to the other competitors who sent in under motto. We may also ask at the same time if Mr. Samuel Loxton, a member of the Local Board of Health, and brother to the selected architect, practising under the firm of Loxton Brothers, was present at the committee meetings (which were four in number) held for the purpose of selecting the three best designs, the best in the end turning out to be that of Mr. John Loxton. We have been informed by good authority that Mr. Samuel Loxton was present at the committee meetings assisting to select the best designs. If such is the case, it appears very questionable whether the selection of the first prize plan is placed in that position by merit." The whole affair needs explaining.

◆

NEW ELEMENTS OF HAND-RAILING.*

(*Continued from page 294.*)

Plate 7.—Construction of Platform Stairs.

THE good or bad effect of platform stairs depends upon the manner of fixing the position of risers on the plan. For example: Take a twelve inch cylinder, and let the risers stand on the spring line; such arrangement causes both rail and string to have a crippled and deformed appearance. It destroys the general effect of that which should be the most prominent and architectural feature of any interior. A badly designed or ill-executed staircase will condemn a whole building, and nearly every one connected with it.

There is no objection to having the risers on the spring line when the cylinder is small—say, six or eight inches.

---

* This series of articles is a reproduction of Robert Riddell's work on the subject, published in Philadelphia, and by Trübner and Co., London.

This, and the following practical drawings, will explain the correct mode of finding the position of risers at the cylinder; also, the proper construction of wreaths for the same.

Fig. 1 is the ground plan of platform stairs, having a twelve inch cylinder; the thickness of bracket and centre line of rail shown.

Let one baluster stand on line O O. Set off on each side of it the position of the others. Have the spaces from centre to centre to equal half a step.

The balusters are now in position, and clear directions given to draw face of riser, landing, and starting. This done, set off width of steps, and draw risers H and K.

It is now plain that two balusters stand on platform, and the space between equals that on the square steps.

Let the end of starting riser be rounded off in the solid. Work the nosing on end of circular step in the same manner.

This completes the ground plan.

The next question is the cut of carriages landing, and starting at the platform. Also height and pitches of rails.

All this may be shown on a narrow board, in the following manner:—Set a bevel—or what is better, have a framing square. Take a piece of inch stuff, say two inches wide. Make a slit in each end. Slip it on the tongues of square. Fasten the ends with a screw.

This may be set to any desired angle. For example:—Let the margin on the left, Fig. 2, be the edge of a board. Keep the fence of square against it. Then draw a line, say E L, and also that through A, which equals O O on the plan. Next set off from A three spaces towards D; each to equal O O. The letter D shows the springing in the same position as that of D on he plan.

Let the situation of riser K agree with that on the plan. The steps and risers are now spread out, and correspond with those on plan.

The next object is to find the cuts of carriage landing and starting. Also face of platform.

Begin by drawing lower edge of carriage, say five inches from internal angle of step. Next, set off depth of trimmer, say nine inches. Now draw lower edge, cutting at T. Then square up from T, cutting platform at 2, giving V 2, which transfer to plan. Carry up dotted line from 2, and the cut landing is obtained, also face of trimmer.

To find the pitches through centre of wreath as it stands over the plan. Draw the lines touching corners of square steps, cutting through 4 and 6. Join 4 and 6. This line shows the pitch across the cylinder.

To find the half height of wreath. Draw a line through joint 5, cutting at E, which gives E L for it. Also E F at direction of ordinate by which the mould is constructed.

Fig. 3 shows a square. Let the sides equal O O on plan, or the radius which struck centre line of rail. Extend one side, say E F, that being equal to like letters on the left. Draw from F the ordinate touching corner of square. Let the lines from remaining corners be parallel with ordinate. Make the seat square with it. Have L E to equal height L E on the left. Joint E T extended; this being the long diameter of ellipse; also pitch a plank.

Square over the lines from E, H, O, T. Let E 5 equal L and corner of square. Make H 4 equal S O, and T 3 equal T E. Join 5.4 and 4.3 extended. These lines, to be correct, must equal the pitches on the left having corresponding figures. The straight shank 2.3 may be any length desired, the line O O being the minor axis.

The mould here is always made equal to given width of rail. Half of which is on each side of O. Find the wide end of ellipse on the pitch E T. The mould is now ready to be struck with a trammel, straight edge, or string. Adopt the last because the quickest.

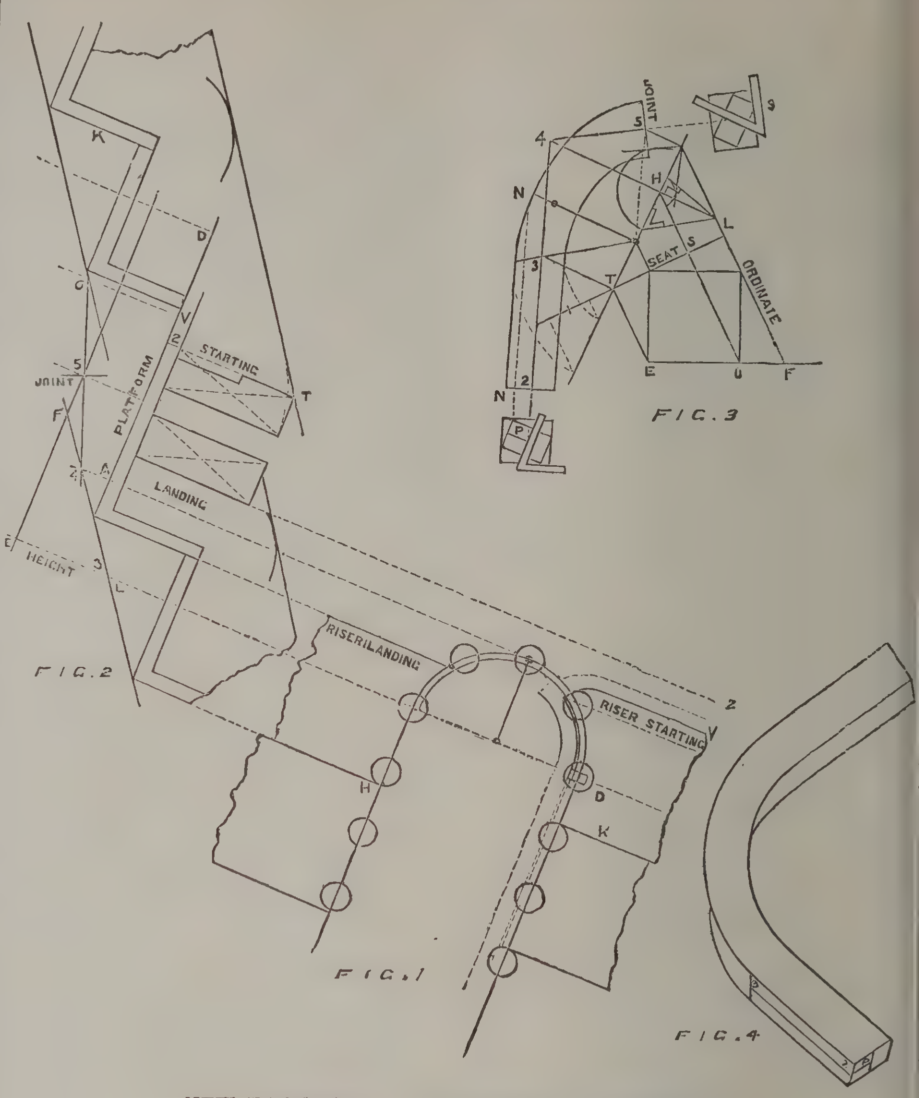
To find bevels. Draw two lines from E parallel with 5.4 and 4.3. Take any point on pitch, say H. Square over to L. Then, with H for centre, strike a circle that will touch the parallel of 5.4, and cut at O. Join O L, thus giving an angle which contains the bevel for joint 5. Its application to the joint is shown by square section on right; the stock S being on surface of plank.

Take H again for centre; and strike a circle touching line parallel with 4 3, and cutting pitch near H. Join this point and L, and the angle thus made gives the bevel for joint 2 on the shank. Its application is shown by square section.

The mould and bevels are now complete. Mark the stuff and cut it square through. Face one side. This done, lay the mould on and mark the joints; also points that will give a direction to draw lines 2.4 and 5.4 on surface of stuff. The object of these lines is to prove the correctness of joints. For example:

Take a nine or twelve inch square. Keep the stock against joint 2. See that its blade and line 2.3 agree. This all right, hold the square so that its edge and surface of plank agree.

Adopt this method for all joints made on handrails. To apply the bevels:—Run on a gauge line to half thickness of stuff. Intersect this by squaring over 2 and 5. You have now the centre of plank. Let the blade of bevel pass through it, as shown. Mark width and thickness of rail on both joints. This may be readily done by having a thin pattern just the size, and a square line on it which falls on that made by bevel. The mould, as it lies, represents upper side of wreath piece. Cut off the slab N N and work to bevel. This done, square over half thickness of rail shown at P. Continue it along the bevelled edge and square with joint. Transfer 2.3 on the mould to line on edge. Then draw the plumb line or pitch.



NEW ELEMENTS OF HAND-RAILING.—PLATE VII.

Perhaps the meaning will be better understood by looking at Fig. 4. The plumb line being that of pitch board which a square step and riser make.

You are now ready to apply the mould. Lay it on. Let the straight part on the left be fair with bevelled edge of stuff. Have line 5.4 stand opposite bevel line on joint, as shown by square section.

Now mark the surface of stuff according to edges of mould. This being done, let the application be the same for the other side. Cut off the slabs, and give the piece its cylinder form. Work up to lines on surface. Hold plane or saw in the same direction as plumb line on bevelled edge.

This done, the wreath piece is ready to thickness. Lay mould on. Keep its joints fair with those on the stuff; and have line 2.4 opposite that made on surface. Now square over; minor axis O O on both edges of stuff. Mark half thickness of plank. Set off half the thickness of rail on each side of it. These points and square section on joints give a clear direction to cut the off slab on upper surface of wreath piece. Work through half the thickness on both edges that have just been marked. This squares the piece and shows it a parallel width. Next gauge to a thickness.

The joints are now ready for dowels and handrail screws. Connect shanks and straight rails first. Clean off the joints. This done, take them apart. Now connect centre joint 5. Be particular to have lines made by bevel stand exactly opposite to each other. This throws both shanks to the proper pitch of stairs. Clean off the joint. Be careful to have no humps, lumps, or any deformity in the curves. Take the wreath in both hands: hold it up before you: see that the corners present to the eye bold and flowing lines. This is an evidence of the workman. It would be well to leave the thickness full at joint 5. Such precaution gives the opportunity of regulating any defect that might appear on either upper or lower side.

It may be proper to state that the methods which have just been given for finding bevels, and their application to joints, are the same for every wreath throughout this work. Bear this in mind, so that repetition may be avoided.

The line E T, being both pitch and major axis, shows that the mould can be produced from that line. For example: Take a piece of board; run a gauge on the face, say inch from edge. Lay it on, and mark E, H, O, T. Square over the lines; then transfer the distance between seat and corners of square. Find points to insert pins. Then sweep the curves, which completes the mould in a practical manner.

(*To be continued.*)

◆

S. Mary's Church, Barnsley, was reopened by Bishop Jenner, on All Saints day, after restoration by Mr. Bodley, at a cost of £2,000.

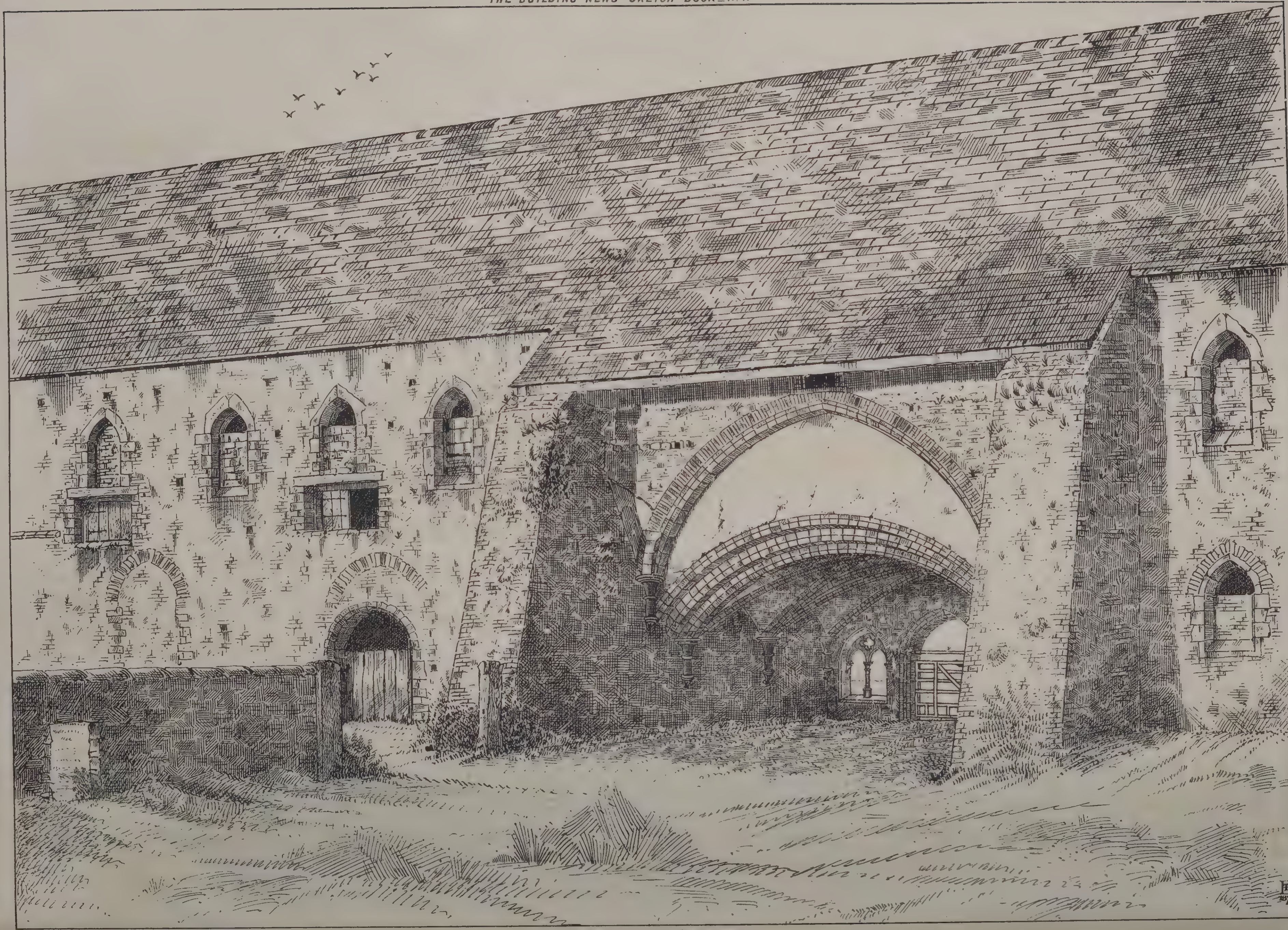
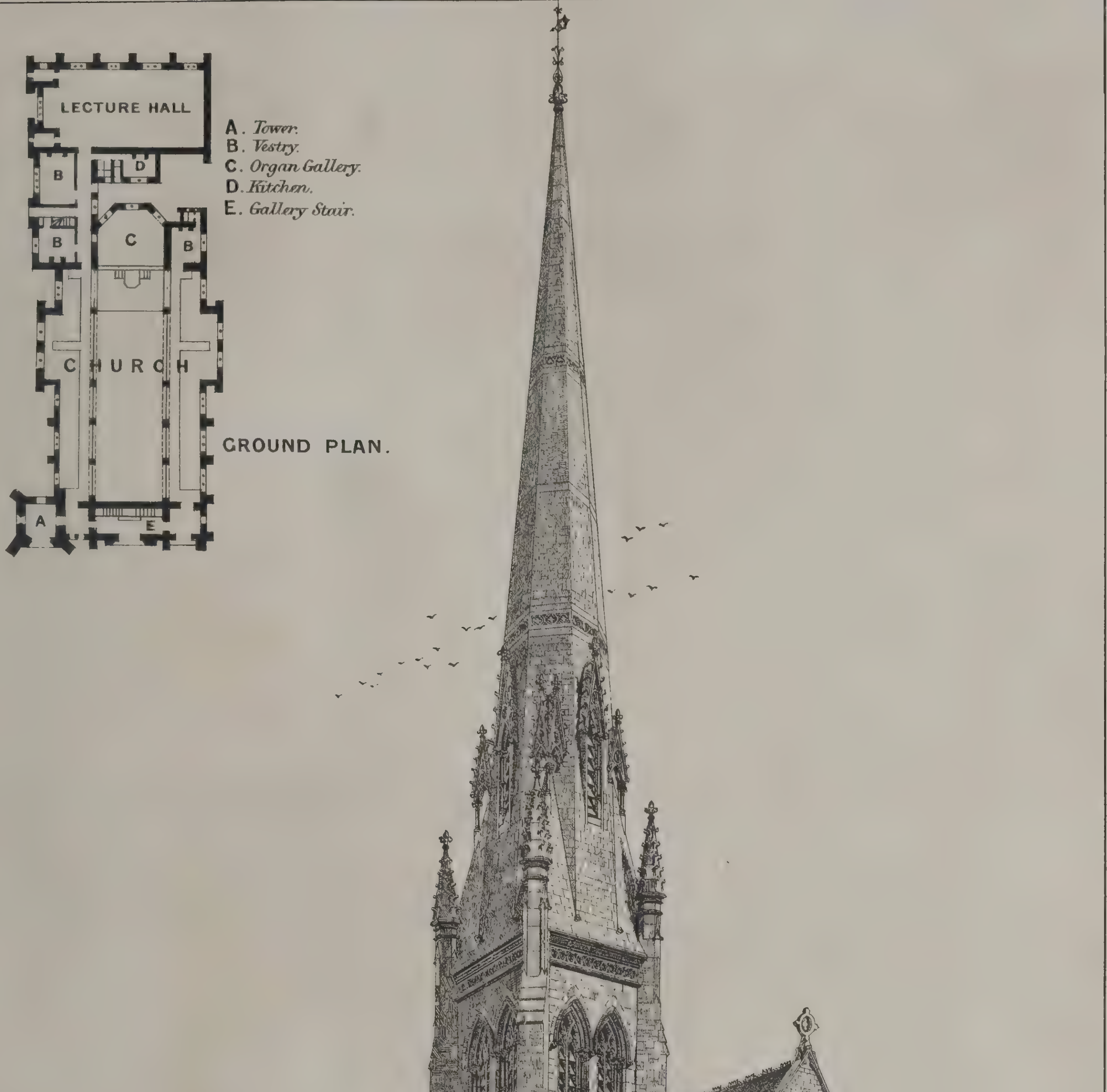


Photo-Lithographed by Whiteman & Bass, London

Cleeve Abbey.

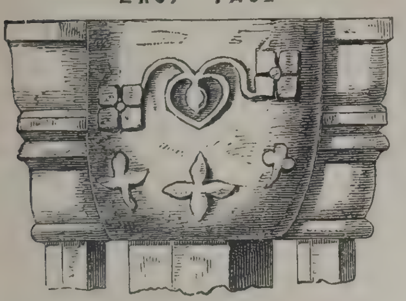


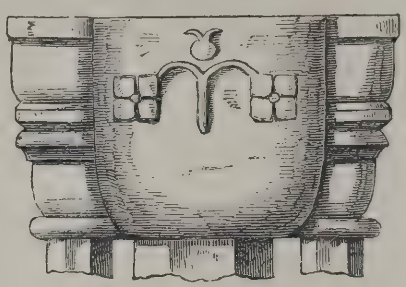
CONGREGATIONAL • CHURCH • STAMFORD • HILL • MIDDLESEX •

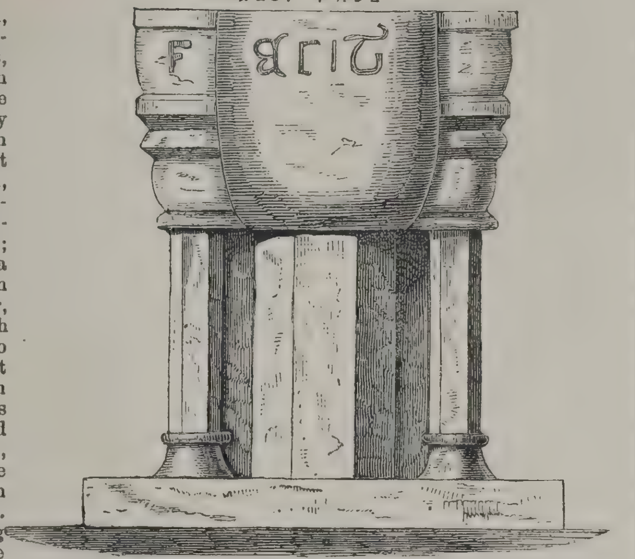
J. TARRING & SON. ARCH^{TS}.
69. BASINGHALL ST.

Photo-Lithographed by Whiteman & Bass, London.

FONT IN LLANDEWEDNACK CHURCH, CORNWALL.


EAST FACE


SOUTH FACE


WEST FACE

THIS interesting little church, situated in a primitive fishing village near Lizard Point, is one of the many Cornish village churches in which the fabric appears to be entirely of Perpendicular date, but which contain very old and quaint fonts, some of them Norman, some apparently thirteenth century work. The sketches represent three of the four faces; the fourth is covered with a long inscription, very much obliterated. It would appear, however, to have ended with the name of the workman who executed it, and I presume that the inscription, not having been properly arranged, he was obliged to carry his last word—"fecit"—to the western face, where he executed it in the rude fashion which has been exactly copied on the sketch. Whether there is any meaning in the quaint devices on the south and east faces, perhaps some reader of the BUILDING NEWS may be able to suggest; my own idea is that they are merely an effort of an uneducated mediæval village artisan, who probably designed and executed the whole work. In the same church is a very curious hagioscope of Perpendicular workmanship.

J. B. FOWLER.

◆

GATEWAY, CLEEVE ABBEY, SOMERSETSHIRE.

THE Cistercian Abbey at Cleeve is situated about 14 miles from Taunton. The remains, in a good state of preservation, consist of the gateway, the refectory, dormitories, and a small portion of the cloisters. The gateway, of the Perpendicular period, has some sculptured figures, in niches, one of which contains a figure of our Lord on the Cross, unfortunately much injured by the effects of the weather, but which, however, does not seem to have suffered from the mad violence of the Puritans. The refectory, now used as an apple store, has a very fine florid Perpendicular carved hammer-beam open timber roof, which has escaped the almost inevitable and detestable whitewash brush. At one end of the refectory is a large wall-painting of the Crucifixion, very fairly executed, and in good preservation. The dormitory buildings, with various offices on the ground floor, appear to be of the early part of the thirteenth century, and partake of a French character; indeed, it is very evident, from the style and character of the work, to have been wrought at least under the superintendence of a Frenchman, if not by French workmen. The gateway under the dormitories, leading from the cloister garth to (presumably) the monks' garden, is a good specimen of plain early work, and evidently, from the remains of two groining ribs, it was entered on the garden side, through a porch, which would appear to have been as high as the two stories of the dormitory building, the gateway itself being kept low, in order not to interfere with the floor level of the dormitories. The groining ribs have distinct traces of colour upon them. The Abbey now forms convenient farm buildings, the dwelling house being a comparatively modern erection next the refectory and the cloisters.

THOMAS BATTERBURY.

NEW CONGREGATIONAL CHURCH, STAMFORD HILL.

THIS building (an illustration of which we give) when completed will be one of the largest and most important of the many new congregational churches in the neighbourhood of London. It stands on a commanding site at the highest point of Stamford-hill. The total interior length of the church is 120ft., including an apse 22ft. long. The width across the aisles is 51ft. 6in., and across the transepts 64ft. 6in. The height of nave is 38ft. to plate and 47ft. to ceiling, the roof up to ceiling being open-timbered, and supported by trusses with moulded circular ribs. The tower and spire, placed at the north-west angle of the building, will have a total height of 160ft. to top of stone finial. The church will accommodate about 1,400 persons. At the back of the church is a lecture-hall to accommodate 350 persons, two large public and two private vestries, church-keeper's apartments, &c. The walls will be finished externally in Kentish rag in drop coursed work, and the interior of church and lecture hall in Bath stone ashlar. Pewing and gallery front will be of pitch pine. The building is from the designs of Messrs. J. Tarring & Son, architects, and Messrs. Dove Brothers are the contractors.

◆

ARCHITECTURAL ASSOCIATION.

THE opening *conversazione* of this flourishing society for session 1870-71 took place on Friday evening last at the rooms in Conduit-street, and was very fully attended. The walls were adorned with a goodly selection of designs and sketches by members of the Association and of the Associated Arts' Institute. Foremost in point of attraction were some very beautiful coloured sketches by Mr. Phené Spiers. On a lower level, and extending nearly all round the gallery, were exhibited the designs of Messrs. Poynter, Yeames, Marks, Eyre Crow, and Horsley, for the frieze of the new Albert Hall of Art and Science, Kensington. Several of the prize designs submitted in competition in the various classes of the Association were also hung on the walls, and much amusement was afforded by the humorous and cleverly-executed designs for invitation cards of the "Picts" and "Goths" Clubs. Messrs. Gillow, of Oxford-street, sent a collection of furniture, including one or two very good sideboards, and Messrs. Brangwyn, of Bruges, exhibited some fine specimens of ecclesiastical embroidery.

Mr. T. H. WATSON, A.R.I.B.A., the President, having taken the chair, Mr. B. A. Paice, one of the honorary secretaries, read a long list of gentlemen nominated as members, after which the prizes won by the members during the last session were distributed, as follows:—

Association prize of two guineas and a half to members for the best essay on either of the following subjects, viz. (1) a monograph of the architect Inigo Jones, and his works; (2) An essay on the causes that influenced the development of Mediæval architecture. One essay was submitted on the former subject, and two on the latter. The best of these essays was found to be by Mr. John Slater, B.A.

Association prize of two guineas and a half, to members of the Class of Design for the best set of sketches contributed in the class during the session, and prize of one guinea and a half (also given by the Association) for the second best series:—First prize to Mr. W. L. Spiers; second prize to Mr. A. Webb; honourable mention made by the judges of the designs submitted by Mr. Clarke.

Mr. JOWERS's prize for the best series of detail drawings submitted in the Class of Design was awarded to Mr. W. L. Spiers. The extra prize given by the President of the Class of Design (Mr. E. C. Lee) was awarded to Mr. J. S. Newman.

Association prize of one guinea and a half to members of the Elementary Class of Design, for the best series of studies submitted during the session:—Awarded to Mr. J. A. Reeve; honourable mention made of those by Mr. Yates.

Association prize of two guineas to members of the Class of Construction, for the best summary of subjects treated at the meetings of the Class—Awarded to J. Sulman, jun.

Sir WILLIAM TITE's prize of five guineas, to members of the Association, for the best design for a middle class school for 100 boys—Awarded to Mr. E. Clarke. (The design by Mr. J. Hinton Bryan was declared by the judges to be next in order of merit.)

The Architectural Union Company's prize of £5, to members of the Association, for the best series of measured drawings from existing buildings in England, or portions of the same, erected previous to the eighteenth century—Awarded to Mr. Robert Pearsall; second prize of £2 10s. (offered by the Association) for the second best series—awarded to Mr. Alexander H. Kersey. Honourable mention was made of the series of drawings submitted by Mr. J. A. Reeve.

The CHAIRMAN next addressed a few words of welcome to the company, after which

Mr. EDMUND SHARPE, of Lancaster, made a few observations congratulating the Association on the efforts which it was making to extend the education of its members, and to elevate the status of the profession. He referred to the excursion (made under his auspices) during the autumn of about forty members of the Association to Lincolnshire, and expressed his willingness to give his assistance on any similar occasion.

Professor KERR next congratulated the Asso-on its prosperity, and on having for its President this year one of its members who had passed with the greatest distinction through the Voluntary Examination. He hoped that the Association would provide the Institute with many more candidates for the Examination like Mr. Watson, and that such candidates would furnish the Association with equally distinguished presidents.

Mr. T. ROGER SMITH having put in a plea for some attention being given to the pen as well as to the pencil in order that the members, when in active practice, might be as well able to express their ideas clearly as to design tastefully,

Mr. WILLIAM WHITE, F.S.A., and Mr. T. Chatfeild Clarke briefly addressed the members, who then dispersed to enjoy the music, &c., provided for their entertainment.

The real business of this session of the Association commences this (Friday) evening. We append a syllabus of the proceedings for the ensuing session:—

1870, Nov. 4, Annual Meeting and Address by the President. Nov. 18, On the Use of Colour in Diagrams illustrating the History of Architecture, by Edmund Sharpe, Esq., M.A., F.R.I.B.A. Dec. 2, Prize Essay, by the Author; On the Nineteenth Century, by J. W. Rhodes. Dec. 16, The Arrangement and Ventilation of Hospitals, by S. Salter, A.R.I.B.A. Dec. 30, Architectural Treatment of Rubbish, by G. R. Redgrave. 1871, Jan. 13, Colour Decoration, by J. D. Crace, A.R.I.B.A. Jan. 27, London as a Field of Study for an Architect, by T. Roger Smith, F.R.I.B.A. Feb. 10, Members' Soiree. Feb. 24, Notes on the recent Works at Allhallow's Church, Lombard-street, with Remarks on Sir Christopher Wren's Churches, by F. J. Francis, Esq., F.R.I.B.A. Mar. 10, Christian Symbolism, by G. H. Birch. Mar. 24, Ironwork of the Middle Ages, by C. Baily, Esq. Mar. 21, Treatment of Terra-cotta, by J. T. Perry, A.R.I.B.A. May 5, General Business Meeting; Canterbury, by E. C. Lee, A.R.I.B.A. May 19, "Put Yourself in his Place," by E. J. Tarver. June 2, On the External Architectural Treatment of Portland Cement, by Rowland Plumbe, F.R.I.B.A. June 16, Nomination of Officers; Architectural Decoration, by C. Aldridge. June 30, Election of Officers; General Strength of Materials, by G. Aitchison, Esq., B.A., F.R.I.B.A.

◆

MR. R. WESTMACOTT, R.A., ON THE EDUCATION OF ARTISTS.

Associated Arts' Institute.

THE opening *conversazione* of this Institute, for session 1870-71, took place on Saturday evening last in the rooms of the Architectural Society's house, 9, Conduit-street, Regent-street. The numerous objects of art and art manufacture which lent additional interest to the Architectural Association *conversazione* of the previous evening were also retained on this occasion, and the musical programme was carried out by the following artists:—Vocalists: Miss J. E. Smith, Signor Nappi, and Mr. Plater; pianoforte, Mr. Henry R. Bird; flute, Mr. A. Collard. During the evening,

Mr. Richard Westmacott, R.A., delivered his usual inaugural address. With reference to the position of the Institute, he said that there had not been any falling off in the number of members during the past year. In the last session some very admirable papers were read, and there were some interesting discussions and the usual exhibitions of sketches. He regretted that the Institute had sustained a great loss by the resignation by Mr. Potter of the office of honorary secretary. From the founding of the Institute he had been a most indefatigable and useful worker, and it would be impossible to describe adequately the Institute's obligations to him, and it was satisfactory to notice that he still remained a member of the committee. The Institute (Mr. Westmacott proceeded to say) will be carried on upon the same principles as those which have hitherto guided its proceedings. By combining in its composition the professors of every branch of fine art,—painting, sculpture, architecture, and engraving,—it is desired to impress strongly upon all the great advantage of considering that there is, or ought to be, a close connection between all the various arts of design, and that they are most successfully practised when they mutually aid and develope each other—a position which might have been strengthened and illustrated by great examples if time could have been spared for it. Papers will, as usual, be read on art subjects. There will be free discussions on subjects relating to the theory and practice of art, and occasionally exhibitions of original designs by members. All these objects are purposed to aid and develope the intelligence, diverted to a specific end, of those who may take part in such exercises, and to assist the artist's education in principles, without which any excellence a work of art may exhibit must be little other than accidental rather than deliberate; whereas, when the excellence is founded on and is the result of knowledge and reflection, a fine work becomes a trustworthy example and a safe guide for all time. It may not be in the power of all or of many artists to produce works of commanding excellence. Art is no easy calling, and but few, comparatively, can expect to succeed in becoming eminently great in practice. But every artist should endeavour to be an authority on theoretical questions, and on the principles of the art he professes. It may be said "Genius will assert itself, free from the trammels of rules and dogmatic teaching." There is no intention to dispute it; but genius is often fondly assumed to be present when, it may be, none, or a very poor counterfeit of it, exists. But admitting all its claims, it is no disparagement of genius to assert that its direction and development may be greatly aided and intensified by education. This takes nothing from the value of the possession of genius in the sense of its being a divine gift. It is only intended to show that where a superior and peculiar power or aptitude in a particular direction is exhibited, be it in fine art, poetry, music, or science, the addition of education, of a kind to develope the gift, so to call it, cannot but be beneficial. But what if this exceptional gift of genius has not been vouchsafed, or that any delusion as to its possession be rudely dissipated, and the artist awakes to the fact that he is only endowed with the ordinary commonplace faculties, neither greater nor less, possessed by other people? It is with the purpose of aiding such average artist that this and similar societies may have their use by inviting his attention to questions relating to his profession, both in its theory and practice The lecturer continued:—

I may here make some remarks on the value of education beyond its practical uses, viz., the influence it enables the cultivated professional artist to exert in the world and in society when art is the subject of interest and conversation. If artists willingly refuse to acquire such knowledge, where is it to be looked for? If they who profess art are unable to discuss it, what defence or security can there be against the false criticism and the pretentious dogmatism of ignorant but conceited self-elected arbiters of taste?—whereas the feeling that a competent judge is present, in a well-educated, practical artist, to hear what is said will of itself often act as a check to crude and unsound enunciations on art. Can it be doubted that such influence was exercised in the society they frequented by such men as Sir Joshua Reynolds, Barry, Fuseli, Flaxman, Eastlake, and others who might be named? Of course the first object of an artist should be proficiency in his art. This is to be the great aim of his exertions. But the acquirement of knowledge in the theory and principles of art need not in any degree prejudice practice. On the contrary, if it does so it is owing to other causes, not to any inherent evil in the acquisition of knowledge—the mere supposition is absurd—but to the want of a proper arrangement or distribution of study. The one may be done, and effectually, and yet the other not be left undone. I remember on one occasion, when this subject happened to be matter of conversation, a person present quoted the cases of certain eminent artists who were said to be totally uneducated men, but who had produced immortal works, and Turner was specially mentioned. There was no argument in this, and the individual example was unfortunate. First, such exceptionally-fine productions are so, not because of, but in spite of, the deficiencies in education of their authors; and, secondly, it is a great mistake and injustice to parade Turner as an uninstructed and ignorant man. Turner had not the advantage of a classical, and, so to say, polite education, but there have been few distinguished artists who were more able to express themselves with force and clearness on some of the most subtle questions of art, its theory and practice, than was this great genius. I knew Turner well, and met him often, and can bear witness to the respect and interest with which he was listened to (when he chose to discuss art questions) by the most eminent of his contemporaries. He was of retired habits, and seldom joined in such conversations except among intimates, but he was not silent from incapacity. No doubt there have been artists of great power who have not possessed any large amount of instruction out of the immediate practice of their calling; but, at the same time, it is well known that many of the noblest triumphs of art that have descended to us are the productions of some of the most accomplished and learned men of their own or any age—Leonarda da Vinci, Michael Angelo, Titian, Rubens, and others whose names might be added, were not only great among the greatest artists, in a practical sense, but they were also great intellectual lights. And education here does not mean learning Greek and Latin, and following the ordinary Classical curriculum, but, as the derivation of the word indicates, the drawing-out—*educo*—and expanding the intellectual and moral faculties. It is to exercise and enlarge the scope of the intelligence, and to give a range and power of thought which, if associated with a real love and aptitude for art, must greatly aid the artist in his professional work. We must remember that art, especially painting, is now practised on very different grounds to those which gave it its impulse in former times. Except in portraiture—and then but rarely—the almost universal employment of art was confined to pictures relating to religion, to Scripture or Church history, and the representation of miracles and monastic traditions, and here the subjects were seldom left to the artist. They were supplied by his employers, for local or specific objects, so that, ordinarily, it was in the material and technical part, and not in the inventive, that the painter's power was chiefly exercised. How is it now? The painter has to try to attract the attention and to please and tickle his public by finding such subject of every sort and kind as may possibly hit the various tastes and open the purses of patrons but little qualified ordinarily to judge works of high aspiration or of refined treatment. Is it not, then, highly desirable that artists should qualify themselves to produce works which may improve the taste of the public? And can this be better done than by offering in the motive of their works subjects of a refined and pure character, rather than of a low and vulgar and commonplace class—the natural resource of those artists who, themselves uneducated, desire to find purchasers among an equally ignorant public. We know there are persons who fancy that the end and aim of art is imitation, and that a picture which exhibits the careful and elaborate reproduction of an object, however trifling or even coarse and repulsive it may be, fulfils all the requirements of art. Artists should be ready and able to show the danger to which such an error may lead, and while allowing the real value of truthful imitation, to explain that true art is exhibited in selection as well as in correct imitation, and in using beautiful and pleasing rather than common or ugly forms. This does not imply or suppose that every artist is to paint and think in the "King Cambyses vein." Simple subjects may be quite as beautiful and expressive as the most sublime. Those who have a real devotion to art cannot but admit the force of these arguments. Every artist should feel that he ought to be a teacher of the public taste, and having in his especial calling the most ready process, as Horace tells us, of making his appeal, viz, to the eye—he should study carefully and conscientiously to place before the public only such subjects and forms of art as will conduce to this elevated end. The cultivated and well-educated artist will do this, as far as is in his power. At any rate, his "bringing-up," his training, will make him shrink from taking for his art subjects which are coarse, vulgar, or impure.

In conclusion, Mr. Westmacott dwelt on the fact that amateurs or non-professional members were admitted to the Institute, and enumerated the advantages to both professed artists and amateurs conferred by this feature.

◆

ON THE HISTORICAL DEVELOPMENT OF ORNAMENTAL ART.

DR. G. G. ZERFFI delivered his fourth lecture on this subject in the lecture theatre of the South Kensington Museum on Tuesday afternoon last. The lecturer remarked that during the stone age we find no traces of writing properly so called. Instead, ideography was used, as by the Mexicans. Ideography was called into requisition by reason of the vivid imagination of man during the period of his civilisation corresponding to childhood in his corporeal growth. Out of ideography, sculpture by-and-bye took its rise, commencing with the same crude forms or outlines. There were still races of men inhabiting the world who used ideography, and who were, in fact, in their primitive childhood so far as regarded civilisation. Dr. Zerffi next touched upon religion as influencing art. Religion, he said, was most essential to art; so much so that without religion—without its grand moral law—it was impossible to have art. Art being symmetrical and based on the law of harmony and beauty required to be supported by religious feeling. Religion of some sort must speedily take root among men left to the contemplation of the grandeur and beauty of creation. After enumerating the various developments which religion has passed through from the most primitive times,—fetishism, nature-worship, anthropomorphism, and lastly, when morality in the abstract becomes the essence of religion—the lecturer proceeded to trace the influences which these various forms of religion exercised upon art. Stonehenge and the cromlechs and dolmens were undoubtedly the outgrowth of religion, and at a time, too, when a certain state of civilisation had been reached. The measurements of the stones in such works in this country, too, were in the same proportion with those of the stones of similar works at Karnac and in North America. These stones were found with mortices and tenons in them, thus proving that there must have preceded them some kind of wooden construction. To raise such stones in position, too, the use of the windlass and lever must have been known. These facts are indicative of a high degree of civilisation at the time such works were erected, and everything tended to the conclusion that Stonehenge and other such works were temples of religion. As the progress of civilisation was seen in the development of the structures erected by mankind, so also was it to be traced in the development of the Ceramic art. Pottery was indicative of a high degree of civilisation among the people who made and used it, and fossil pottery, or pottery belonging to prehistoric times, was generally found with the form of its vessels corresponding to the shape of a gourd or shell. The most astonishing development of the Ceramic art had taken place in different countries and ages, and by it, in a certain degree, might be measured the civilisation existing amongst a people. As a rule the ruder forms found in pottery are the most primitive. Vessels of pottery were not only fashioned in the shape of the gourd, but in the shapes of shells and other objects of nature, and the ornamentation of such shells as the *cystidea* was often imitated in carvings by savages. These points showed how closely Art and Nature were connected, and this brought the lecturer to a definition of style. In pottery, as in ornamentation, in architecture as well as in painting, Nature was the basis of Art, but Nature reproduced by means of the artist's intellectual force, and only so far as this was the case did the product become an object of art. Realism was only the basis on which idealism was founded. Nature was to the artist an immense storehouse which he had to study, for he would never be capable of reproducing its forms if he was not capable of imitating them. But woe to the artist who clung with slavish pertinacity to imitation! He should rather breathe into art the living ideality; then only would he become a master artist. If a faithful reproduction of Nature were all that was required of the artist, then Madame Tussaud's exhibition of wax figures would be the very Pantheon of sculpture. The *thought* of the artist was wanted much more than his accurate cast of the features of the person to be portrayed, and it was this exercise of thought on the part of the artist that led to the formation of his *style*. The artist had to pour over the products of Nature the bright light of his own conception. Every real artist had a style, and every historian of art had a right to divide and classify those styles as he liked, for style originated in the individual's conception of a certain form. Thus, Michael Angelo, Raphael, and Leonardo da Vinci would have each rendered the same woman differently, for they would all have seen her differently, and to this it was owing that their *styles* varied. The natural object as the basis of all three productions was the same, but the style and treatment would vary with the painter. *Style* was found not only in individuals, but in nations. The more art advanced—the more reality became idealised, the more we were capable of idealising Nature—the more nearly we attained to what was sublime and perfect in art.

◆

BUILDERS' BENEVOLENT INSTITUTION.

THE twenty-third anniversary dinner in aid of the funds of this institution took place on the 27th ult., at Willis's Rooms, King-street, S. James's, the President (Alfred J. Mansfield, Esq.) in the chair, supported by a large number of the leading builders and building material factors of the metropolis.

The usual loyal and patriotic toasts having been given, the toast of the evening, "The Builders' Benevolent Institution," was proposed from the chair. The President, in introducing the toast, said he was glad to see so large an attendance in the interests of the Institution, which was founded twenty-three years ago, and it gave him great pleasure to see its founder (Mr. Cozens) present. The Institution was established for the relief of any members of the building trade, or of the trades connected therewith, who might, from adverse vicissitudes of fortune, become reduced in circumstances. The Institution had since its establishment gone on satisfactorily and prosperously. There were now forty-four pensioners in receipt of annuities from the Institution, twenty-two males and twenty-two females, the former receiving £24 and the latter £20 per annum. He should be very glad to see these annuities increased to £30 for the men and £25 for the women—(hear, hear)—and therefore he asked the company to do all they could to attain this result by increasing, if possible, their own annual subscriptions, and by endeavouring to obtain donations and subscriptions from the many persons connected with the building trade who were unacquainted with the merits of the Institution. The total number of persons who had received benefits from the Institution since its establishment was 108.

The toast of the "Chairman and President" was next proposed by Mr. Benjamin Hannen (Holland and Hannen), and having been briefly responded to by the chairman, the toast of "The Patrons, the Vice-Presidents, and Trustees" (coupled with the name of Mr. Robinson) was next given from the chair, and responded to by Mr. Robinson. In responding to the toast of "The Treasurer,"

Mr. **George Plucknett** pleaded hard for further support being given to the Institution by the building trade. Although its affairs were managed by an excellent committee, with every regard for economy, six or eight poor people were turned away from the Institution every year because it had not quite enough to provide for them. When those poor people came to the Institution they were far stricken in years, and two or three years delay was a very great time to them out of the short period they had to live. (Hear, hear.) He felt the more concerned at this because there was a vast number of men belong to the trade who did not subscribe to the Institution. The greatest possible credit was due to the large employers of labour—a glance at the subscription list would show the large sums they had for years contributed to the Institution. (Hear, hear.) If only a small portion of the men he referred to were to come forward, they would be able to provide for all those applicants now turned away, and have abundance of funds. The remaining toasts were "The Architects and Surveyors," responded to by Mr. Young, and "The Stewards and Directors," spoken to byMr. Cozens, the founder of the Institution.

During the evening, Mr. A. G. **Harris**, secretary, announced donations and subscriptions to the amount of £370, a slight excess over former years.

Mr. Harker officiated as toast-master, and the musical arrangements were under the direction of Mr. Winn, assisted by Miss Blanche Reeves, Mr. Fielding, and Mr. Carter.

◆

NORTHERN ARCHITECTURAL STUDENTS' SOCIETY.

THE second winter session of this society was inaugurated on Tuesday evening last by an exhibition of sketches, drawings, and photographs of architectural and kindred subjects. The meeting was held in the ante-room of the Literary and Philosophical Institution, Newcastle-on-Tyne. One of the rules of the Society requires each of the members to contribute an original sketch once a year at least, and perhaps the most interesting feature of the opening exhibition was the series of drawings executed by the members in compliance with this regulation. The series included perspective views or measured drawings, with the details, of the following buildings, or parts of them:—Tynemouth Priory, Northumberland; Lychgate, Heston, Middlesex; Constable's Tower, Draw-well, Barbican, and the Abbey, at Alnwick Castle; The Nine Altars, Durham Cathedral; Byton Church, Co. Durham; The Keep and Black Gate of the Castle, Newcastle; S. Bede's, Low Friarside, Co. Durham; Bolton Church; Tower of the Grey Friars and Keep of the Castle, Richmond, Yorkshire; and Font in the Church of S. Agatha, Gilling, Yorkshire. Besides these special drawings many others were displayed (several being original sketches made during the year by the members), together with a large number of photographs, the whole amounting to upwards of three hundred illustrations of English and Continental architecture. The exhibition was altogether of the most interesting nature, and if the printed programme of the Society be carried out in its integrity with the same vigour and spirit which characterized the first meeting on the list, the coming session cannot fail to be a successful one.

GOTHIC ENGINEERING WORKS.

IN his recent inaugural address to the Liverpool Architectural Society, the President, Mr. H. H. Vale, said he could not conceive a finer opportunity for the production of great and enduring structural successes than that presented in our geeat modern engineering undertakings, be they dock-works, water-works, or railway works; for in all of these we had those essential elements of grandeur—massiveness of form and stability of material. He did not think the time was far distant when the Gothic style would be more generally adapted to such purposes, an example of which was furnished by Mr. Scott's S. Pancras Station for the Midland Railway. Pugin published designs for Gothic engineering works many years ago, and that at a period when the Grecian Doric portico was considered to be the culmination of good taste as applied to a railway station entrance. The great old mediæval gateways were still left to serve as models, and Mr. Vale trusted we should live to see our true English style applied to all the great engineering works in which this nation acted as pioneer to the whole civilised world.

◆

WORKMEN'S DWELLINGS IN LIVERPOOL.

IN his opening address to the Liverpool Architectural Society, on the 5th ult., the President, Mr. H. H. Vale, said that the workmen's dwellings erected by the Liverpool Corporation, and recently completed, were designed doubtless to supply a long-felt local requirement, as it would be manifestly unfair to close the cellar dwellings and demolish obnoxious court houses, and otherwise trench upon the homes of the people, without filling up the gaps in some one or more ways by municipal interference; and the authorities had found, when constrained to work out the appropriation of space in relation to habitations, that their own stringent enactments had required considerable relaxation in practice, and the bye-laws relating to open spaces about dwellings might now be considered as almost practically abolished. If Liverpool was to have cheap and healthy dwellings for the people, the authorities must meet and encourage private enterprise, and not endeavour to thwart and cripple it, as those stringent enactments undoubtedly tended to do. In a rapidly changing age like the present, when everything around us was progressing with an acceleration which really seems sometimes almost alarming, discretionary powers should be vested in the magistrates and in the corporate officials in these matters, otherwise much money must be wasted in applications for fresh Parliamentary powers to meet the growing wants of a large community like Liverpool. Mr. Vale had learnt, however, that instead of going for a new act to regulate building operations within the borough, it was proposed to vest larger discretionary authority in the magistrates, which he considered would prove to be a much more satisfactory arrangement. The anomalies of the Building Act, as it now stood, were patent to all, and he believed that, but for the strong remonstrances of the Society, a much more unsatisfactory piece of legal verbiage would have been enacted in their midst to impede progress and protect the incompetent at the cost of the energetic and intelligent. Capitalists would go more largely into building operations but for the stringent nature of the regulations with reference to open spaces around buildings, which had too long obtained. Good homes for the people in plenty (and not merely as municipal experiments) were, in his opinion, the first and best things to aid in the reduction of the dirt, disease, and death for which Liverpool had become notorious.

◆

ARCHITECTURAL ASSOCIATION PRIZES.

WE annex a list of the various prizes offered by or through the Architectural Association during the session commenced on Friday evening last. It is true these prizes are offered to members only, and that the accompanying information is within their reach in the Association's little brown book (which yearly gets fatter and fatter, like the London Directory); but it is possible that in order to compete for these prizes many architects' pupils and assistants in or near London may become members of the Association—not that the Association is in any need of such acquisitions to its list of members; they are, in all probability, more in need of the Association. The Association goes on increasing the number of its members year after year, and it has now about 550 names on its books. There is nothing surprising in this when we look at the hearty co-operation of the members with each other in promoting not only a theoretical but a practical knowledge of their art. A glance at the little brown book refered to will show the varied means for the attainment of this end. In consideration of the useful work yearly done by or under the auspices of the Association, masters, no less than pupils and assistants, ought to be thankful for its existence. The prizes annually offered by and through the Association are contended for with a keenness out of all proportion to their intrinsic value, the honour of winning being the grand incentive to the competitors.

OFFERED BY THE ASSOCIATION.

To Members of the Association.—A Prize of two guineas and a half for the best Essay on either of the following subjects, viz. :—1.—A Monograph of William of Wykeham, or John Thorpe. 2.—The Influence of a Cathedral Church on the Architecture of the Neighbourhood. 3.—On the Structural and other differences between Modern and Mediæval Gothic Architecture.

To Members of the Class of Design.—A Prize of two guineas and a half for the best series of Sketches contributed in the Class during the Session; and a Prize of one guinea and a half for the second best series.

To Members of the Class of Elementary Design.—A Prize one guinea and a half for the best series of Studies submitted during the Session.

To Members of the Class of Construction.—A Prize of two guineas for the best Summary of Subjects treated at the meetings of the Class.

BY SIR W. TITE, M.P., F.R.S., F.R.I.B.A.

To Members of the Association.—A Prize of five guineas for the best Design for a hospital for 100 beds. The accommodation and other requirements are left to the competitors. The drawings to comprise two plans, one elevation, one section, and one sheet of details. The general plans on a scale of one-sixteenth of an inch to a foot; the elevations and sections to a scale of one-eighth of an inch to a foot, and the details as large as a sheet of imperial paper will admit.

BY THE ARCHITECTURAL UNION COMPANY.

To Members of the Association.—A Prize of five pounds for the best series of Measured Drawings from existing buildings in England, or portions of the same, erected previous to the eighteenth century; and a Prize of two pounds ten shillings by the Association for the second best series.

Mem.—The object of this Prize is to obtain a series of Drawings showing construction, the jointing and bonding of masonry, and general framing of timbers. Detailed drawings to be made to a scale of not less than half an inch to a foot, and mouldings, &c. at least one quarter full size.

BY MESSRS. COX & SON, IN CONJUNCTION WITH MR. JOHN KEITH.

To Members of the Association.—The Prizes of 10, 5 and 3 guineas each, for the best designs of a set of Communion Service, to be executed for the approaching International Exhibition. The set to consist of Flagon, Chalice, Paten and Offertory Basin. No restriction is made as to design, except that it should not be of a very early or severe style, and for general proportions the following sizes may be taken as a guide: Flagon 10 or 12in. high and to contain a quart; Chalice 8in. high; Paten 6½in. diameter; Offertory basin 12 to 15in. diameter. The designs to be delivered to the Honorary Secretaries, 9, Conduit-street, on or before November 14th, in order that sufficient time may be obtained for their manufacture.

The prizes offered to the several Classes will be regulated by the governing body of each Class, subject to the sanction of the Committee of the Association. All work submitted for any of the above Prizes must be delivered at the rooms of the Association, addressed to the Honorary Secretaries. The Essay and Summary of Subjects treated at the Class of Construction on or before the 31st August, 1871, and the drawings for the other Prizes on or before the 30th September, 1871. Each document to be under motto, and accompanied by a sealed letter signed by the Competitor, bearing on the outside the same motto, for the purpose of indentifying the successful Compeditor with the work sent by him. There must also be inscribed upon the cover the number of separate Drawings or other work sent, and the Title of the Prize for which it is offered—any neglect of these regulations may prevent the work being submitted to the Judges.

Note.—No member is eligible to compete for any one of the above Prizes who has already obtained the corresponding Prize in a previous year.

◆

SCHOOLS OF ART.

Portsmouth.—The establishment of a School of Science and Art in the borough of Portsmouth and Gosport was formally inaugurated a fortnight ago by a *conversazione*, held at the rooms occupied by the school, in Pembroke-street, Portsmouth.

York.—The annual meeting of the subscribers and friends of this institution was held at the school, Minster-yard, in this city, on the evening of Wednesday week. The committee in presenting their report of the condition, position, and progress of the institution during the past year, feel that the first part of their duty consists in making known to the subscribers the number of pupils under instruction, as well as their success in the several competitive examinations required by Government. The average number of pupils in attendance on the several classes during the year has been 94, showing a slight increase on that stated in the last report, when it was 83. The results of the Government examination are as follows:—In the second grade, 27 passed in freehand drawing, of whom 9 were marked excellent; geometry 6, of whom 4 were marked excellent; perspective 3, of whom 2 were marked excellent. 13 received prizes, and 36 passed the ordinary examination. On comparing these results with those of the preceding year, it will be found that in 1868-9, 29 passed and 5 received prizes, giving, therefore, 8 less not receiving prizes, and 7 less as having passed the examination.

◆

ARCHÆOLOGICAL.

The Archæological Institution of Great Britain and Ireland have expressed their inability to accept the invitation made to hold their meeting next year at Southampton, but they hope to make a visit to that town at an early date.

Discovery of Wall Painting in Norfolk.—When pulling down the north wall during the recent restoration of Starston Church, Norfolk, under the direction of Mr. R. M. Phipson, in about the centre of it, and within 2ft. of the ground, a niche was discovered. It was about 4ft. wide and the same in height, measuring to the top of the arch, and had evidently been bricked up for some centuries. It was about a foot deep, and on the wall at the back of it was painted in very brilliant colours a scene representing the death of the Virgin Mary. This was very well drawn, and some of the more minute parts were almost like miniature painting, and would bear looking into with a magnifying glass. Although it could not be preserved, as the colour was so perished that it shook off like dust, a very careful drawing of it has been made, and will form one of the illustrations to the next number of the *Archæological Journal.*

Norton.—A very curious discovery has just been made at Norton, East Riding. A few weeks ago Mr. John Newton, of Norton Villa, had an excavation made for a new vine border, and there found a slate-coloured Roman lamp of a small size. A few days ago another hole was dug for a tank a few feet distant, and four other lamps, all of red ware, were thrown out, of which three have marks of the burnt wick. The dark-coloured lamp and the ornate red one have pierced ears; the others have merely a projection of clay as a handle. No sign of interment was found, but the place is close to the small square camp opposite the great station at Malton.

The East Riding Tumuli.—The Rev. Canon Greenwell, of Durham, accompanied by the Rev. C. W. Lukis, of Wath, Ripon, and many other archæologists, has spent the month in the examination of the British grave-mounds on the estates of Sir Henry Boynton, at Rudstone, near Bridlington. The barrows form part of a large group, some of which, opened last year, produced most remarkable stone cists, seven in number, and a large and very peculiar right-angled mound, all on the crest of the first range of Wold Hills, overlooking the wide plain of Holderness. Some interesting discoveries have been made in the mounds up to this time examined, and the diggings are yet proceeding, Mr. Greenwell being now engaged on an enormous barrow, 100ft. diameter and 10ft. high, likely to occupy some weeks. The work has aroused the greatest interest in the neighbourhood, and quite a rage has set in for the collection of flint implements, which are numerous in the surface soil of the district.

Architectural and Archæological Society of Durham and Northumberland.—This society held its last meeting for the season on Monday week at Tynemouth and Seaton Delaval. The day was tolerably fine for the season, and there was a good attendance of members. They met at Tynemouth at 11 o'clock, and proceeded to the Priory, which was carefully examined. At noon, the company went by the Blyth and Tyne train to Seaton Delaval, where the hall and church were visited. At a quarter to 3 they returned to Cullercoats, and viewed the Monk's Stone at Monk House. The members dined together in the evening.

Building Intelligence.

◆

CHURCHES AND CHAPELS.

Barrow.—On Tuesday last, being All Saints' Day, the parish church of Barrow-on-Soar was reopened, after undergoing a thorough restoration, indeed we may almost say rebuilding. During the course of the repairs, which were commenced over two years ago, the tower (having been shaken by the removal of a portion of the west wall of nave) fell with a tremendous crash on the 19th December, 1868. This accident led to the reconstruction of nearly the entire building. The new tower is the gift of Squire Herrick, of Beaumanor, and Mr. Crossley and other gentlemen have subscribed liberally to the building fund. The church is built of Mount Sorrel granite, with dressings of freestone. The seating and internal woodwork is of pitch-pine. The font, the gift of Mr. Crossley, is of Ancaster stone, with steps of Hopton-wood stone, the priest's step being polished. The font and the stone carving throughout the building has been executed by Mr. Tinkler, of Derby. The architect was Mr. Stevenson, of Derby, and the contractor Mr. E. Roberts, of Weedon; Mr. Miller acting as clerk of works. Barrow Church contains some curious monuments and a fine peal of bells. These bells were fortunately removed from the tower just before it fell, and have been tuned by Taylor, of Loughborough. The canons have been removed and replaced by bolts in order that the bells may from time to time be shifted round on the stock to prevent the sound-bow from being worn thin in one place. We propose next week to give a short discription of the Barrow bells, together with thei inscription, and dates.

Canon Pyon.—The church of Canon Pyon, Herefordshire. is a very fine and venerable structure, of about the twelfth century, with a fin tower, containing five bells, placed in it abou 1750. It has a north and south aisle, with chapel at the east end of the north aisle. Th aisles are separated from the nave by arches, th pillars of those on the north side having beautifully carved capitals. On Tuesday, the 25th ult. was celebrated the restoration of this ancient an interesting church, successfully brought to a termination by the architect, Mr. Ward, whose wor is chiefly conspicuous in the fine wooden roof o the nave.

Clapton Park.—The foundation-stone of th new district church of All Saints, Clapton Park was laid on Saturday last, the 29th ult., by A. J B. Beresford Hope, Esq., M.P. The Rev. F. H Stammers, the incumbent-designate, assisted b several of the local clergy, officiated; and the attendance was more numerous than might have bee expected from the very unfavourable state o the weather. The church, which will accommodate upwards of 800 worshippers, will consist o a nave, lighted by a lofty clerestory, aisles, chance and south aisle, with vestries and organ chambe on the north side of chancel. The walls will b faced externally with Kentish rag, and internall with red brick relieved by coloured bands. Th tower and spire, to be hereafter added, will b erected at the west end of the south aisle of nave The style of architecture adopted is the Earl Geometrical, of the end of the thirteenth century At the conclusion of the ceremony, a déjeûne took place at All Saints Lodge, the residence o the incumbent. The architect, under whos supervision the above works are being carried out is Mr. Francis T. Dollman, of No. 9, Adam-street Adelphi. The contractors are Messrs. Dov Brothers, of Islington.

Erith.—The new (Roman) Catholic Church c S. Fidelis at Erith, was solemnly opened on th octave of the feast of S. Edward the Confessor, b the Archbishop of Westminster. The church situated between the North Kent Railway and th river. It is about 80ft. long by about 25 wid and of good height. There are two painte windows containing figures of S. Francis an S. Clare. Beneath these are two small fres paintings representing angels in adoration. Th decorations of the chancel and of the altar are n yet complete. The church has cost £1,20 exclusive of fittings. The architect is Mr. Saunders.

Highclere.—A church has just been erecte at Highclere, Hants, at the cost of Lord Carna von, from a design by Mr. G. G. Scott. The wor were commenced in the early part of the summer of 1869, the principal stone being laid by the Countess of Carnarvon. The church, which occupies a site within a short distance of Highclere Castle, is built of flint, with Bath stone dressings, and the style is Early English of the fourteenth century. The tower is 54ft. in height, and is surmounted by a spire of 50ft. The decoration of the interior is exceedingly beautiful, and every part of the structure shows that Mr. Scott's design has been worked out most carefully and successfully. The consecration of the building will be celebrated shortly.

Starston.—The old parish church of Starston, Norfolk, was reopened on Tuesday week, after restoration. Previous to the commencement of the work the church consisted of a nave and chancel, south porch, and west tower, of various dates. The nave-roof is good in detail, and has been figured in Brandon's "Open Timber Roofs." It has been carefully restored and releaded, all the old parts which were sound enough being preserved. A north aisle has been added, at the east end of which a chamber has been provided for the organ, the old western organ-gallery being removed. Additional oak benches have been provided, similar to those provided twelve years ago. Mr. R. M. Phipson was the architect employed, Mr. Grimwood, of Weybread, being the contractor; and the total cost has been about £1,000. The church is heated by Gidney's underground stove.

Stony Stratford.—The foundation-stone of the new chapel of S. Paul's, Stony Stratford, was laid by the Bishop of Oxford on Wednesday week. The new chapel will be erected on the plan of the collegiate churches of the universities, and will combine the usual features of ante-chapel, choir, and sacrarium, with the addition of transepts on either side of the chancel. The material used will be local stone of a warm tint, with quoins and dressings of red brick. Internally, the arches, strings, and other architectural features will be of red brick, grey granite being used for the chancel arch piers, the capitals and other sculptured work being executed in Bath stone. The floors throughout will be paved with encaustic tiles. The roof will be waggon-formed, with ribs at intervals, and with moulded cornice, tie-beams, and shafted king-posts, dividing the space into four bays. This roof and the ceiling of the chancel will eventually be decorated in colour. Above the chancel will rise a lofty spirelet. The architects are Messrs. Goldie & Child, of Kensington-square, London, Mr. Aveline, of Stony Stratford, being entrusted with the execution of the work.

Thornton.—On Wednesday week the memorial stone of a new Church at Thornton was laid with Masonic honours by Earl de Grey and Ripon. The new building will be Early English in style, and is to cost, exclusive of tower and spire, £5,000. There will only be one aisle. Accommodation will be provided for 700 persons. Mr. J. Foster, of Hornby Castle, gave the site. Messrs. T. H. & F. Healey, of Bradford, are the architects.

Tynemouth.—A new Wesleyan Methodist Chapel has been opened at Tynemouth. The building is in the Renaissance style, and has been erected at a cost of £3,200. Mr. F. R. N. Haswell, of South Shields, is the architect, Mr. T. Robson, of the same place, the contractor.

BUILDINGS.

Bolton.—On Thursday week a new Conservative Club, in Mawdsley-street, Bolton, was inaugurated. The edifice is in the Venetian-Gothic style, and forms part of a large block named the Bradford-buildings. The length of the entire façade is 100ft., the club itself having a frontage of 42ft., and a roof quite distinct from and higher than the roofs of the adjoining offices. The club contains, on the ground floor, a reading-room 30ft. square and 14ft. 6in. high, a private writing-room, and a spacious lavatory. On the first floor is a dining-room, 40ft. by 30ft., and 15ft. high, fitted with walnut furniture in the Mediæval style by Messrs. Young & Glover, of Wolverhampton. On this floor there are also a serving-room, pay-office, committee-room, &c. On the second floor is a billiard room, of the same area as the dining-room, while adjacent to it are smoking and card-rooms. The kitchen is in the basement, and is fitted with large cooking-range and other apparatus by Messrs. Marsden & Co., of Bolton. The office portion of the buildings contains about 48 rooms, approached by a grand staircase two stories high. The entire structure has been built of Bolton pressed bricks with stone dressings. The architect is Mr. George Woodhouse, of Bolton; and the contractor has been Mr. Joseph Marsden. The cost has been £7,000, exclusive of the furniture of the building, which has cost £3,000.

NOTICE.

With the aid of the new postal arrangements, which came into operation on the 1st ult., the Building News will in future be supplied through the post at 15s. per annum, instead of 17s. 4d. as hitherto. The halfpenny postal card will also be found useful to those who have scraps of building information, tenders, intercommunication queries and replies, &c., to send.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

To Our Readers.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

Letters relating to advertisements and the ordinary business of the Paper should be addressed to the EDITOR, 31, TAVISTOCK STREET, COVENT GARDEN, W.C.

Advertisements for the current week must reach the office not later than 5 p.m on Thursday.

Received.—E. M., A. S. B., Miss W., W. M., Derwent Foundry Co., J. & W., J. M., H. J. W., M. E. & Co., J. E. & Co., W. H., W. W., R. D.

Architect.—The *American Builder* is published at Chicago, U.S. We know of no agency in London for the purpose you name.

J. P. G., San Francisco.—The letter would be worthless without your name.

Correspondence.

QUANTITY SURVEYORS.

(*To the Editor of the* Building News.)

Sir,—Referring to copy of an agreement lately laid before the London Builders' Society, viz.—"The members agree that they will not tender for any works in competition the quantities of which have not been taken out by a surveyor agreed on by the builders at a meeting of the competitors." If the above arrangement be generally adopted, the anxiety and risk incurred by quantity surveyors will be at an end. At the present time works are open to contractors unfit to compete who do not take quantities, the result being they are either absurdly high or low in their tender. In two large contracts lately let, all the contractors but one took quantities, and in both cases the party not taking quantities got the contract at a very low figure, the surveyor having all his labour for nothing, also being at considerable expense. The builders are equally disappointed, and it often occurs in cases of this sort that one of the unsuccessful competitors is called in to finish the work. It is to be hoped that architects will support this resolution by calling a meeting of builders to appoint a surveyor to prepare the quantities immediately on contracts being advertised.—I am, &c,

Quantity Surveyor.

ARCHITECTURE AND FREEMASONRY.

Sir,—In your issue of 21st October, I perceive it stated in your notice of the Northamptonshire Architectural Society that a paper "On the Connection of Architecture with Freemasonry, and on Masons' Marks," was read by the Rev. H. T. Bigge. Now, as this is a subject in which many are interested, I would be glad to know if the Rev. Mr. Bigge has discovered any documentary evidence of the supposed connection between architecture and freemasonry, either in or before the sixteenth century A.D. I may observe that I have been making diligent search for any documentary or other reliable evidences of the existence of what, for the last century and a half, has been known as "Freemasonry," but I cannot find it. Neither have I been able to find any one who can give it. Consequently if the Rev. Mr. Bigge has discovered anything, we should only be too glad to hear of it. Several centuries ago there were "free-masons," but these were simply pure operative masons, who were free of their guild, and who knew nothing of our "Freemasonry." And, as to "mason's marks," which, so far as I have discovered, might have either an odd or an even number of points, just as it happened, I should be glad to know if any new information can be given about them, for as yet they seem to stand for nothing more than the signature, initial, or "mark" of the operative mason, merely to show who wrought the stone,—I am, &c., W. P. Buchan.

West Nile-street, Glasgow, Oct. 29.

LIMITS OF TECHNICAL EDUCATION.

Sir,—In your excellent article "On Technical Education," which appeared in the Building News last Saturday, a doubt is expressed as to the propriety of making modern languages and literature, ethics, health, music, and gymnastics, portions of the curriculum of the National University. I shall esteem it a great favour if you will allow me to offer a brief explanation of this matter.

The National University is designed for the special purpose of training professors and teachers for the new technical schools and colleges which must shortly be called into existence, preparing candidates for the public service; managers and foremen for large engineering, manufacturing, and commercial undertakings; captains and chief officers for the national and mercantile navy; and merchants who will trade with every nation on the face of the globe. To those men, a knowledge of the languages, literature, arts, and manners of the people with whom they are brought into contact will be one primary element of success. A knowledge also of the productions of other countries and their contributions, present and prospective, to our trade and commerce, are matters highly desirable in a mercantile community, and ought, therefore, in our estimation, to be taught in the technical schools and colleges of England, as well as those of the Continent, where they now hold a distinguished place.

With regard to health, ethics, music, and gymnastics, it is necessary, before giving an opinion on the desirability of admitting them as subjects to be taught in the institution, to consider who the students are likely to be, and the conditions which they are to be placed under during the time in which they are pursuing their scientific and mechanical studies. The suitableness of everything will depend on this.

Those who proposed the National University assumed that as a rule students from the country would reside for three years in the institution, and that many of them will be what used to be termed, not only without reproach, but as a matter of honour, "poor scholars." The plan which we hope to see adopted in the future education of England is, that the best and most gifted boys in the primary school shall obtain scholarships of a certain amount, say from £20 to £30 per annum, in the secondary schools, and those again who have won distinction in the secondary institutions should have scholarships awarded them, of say £100 per annum and upwards, in the University. Those young men then would be the very élite of England's manhood, would come to enter upon a course of severe study just at the time when the body is being set or consolidated into the type which it shall present through life, and having completed their studies they will go forth and leave the impress of their lives in every walk of life.

Now, it is necessary, above all things, that the health of those students should not only be preserved, but in addition to this they should know how to preserve the health of those who in after life shall be committed to their care. I need say nothing of ethics. Without a bright tone of morality, science, art, and wealth are comparatively worthless. Studies, especially those of a mechanical order, are apt to give an undue development to certain sets of muscles to the detriment of the general health, and hence the necessity for gymnastics. Music again has been found to be the greatest aid yet discovered to study as well as toil, by clearing and invigorating the mind. Cheerfulness is essential to greatness; sad people are slow in body and dull in mind.

In conclusion, Mr. Editor, I beg to assure you that the curriculum of the National University is based on that of the most successful technical institutions in Europe.—I am, &c.,

John Mill,
Sec. to the National University.

4, Storey's-gate, Nov. 2.

CONCRETE BUILDING.

Sir,—After reading the letter of W. May, junr., in the Building News of last week, I am quite at a loss to understand how he makes good his claim of being able to build the walls of houses on the "block system" better in all respects than the continuous or frame principle of concrete building. In the first place, he says he uses his materials in the proportion of 1 part of cement to 6 parts of gravel, and in giving the quantity required for 100 blocks of concrete, which shall be equal in bulk to 1,000 common bricks when laid, he states it to be "2 yards of gravel, 2s.; 4 bushels of cement, 8s."; now, as two cube yards contain 42 bushels, it is clear that 4 bushels of cement would be as 1 to 10½, instead of as 1 to 6. Then again, he says he builds his walls hollow, forming them of two portions, each 3½in. thick with a 5in. cavity, making a 12in. wall, and bonded with concrete blocks cast hollow to prevent damp penetrating, by doing thus he does "double the work in bulk with just half the materials" (I assume he means) than there would be in a solid wall of the same thickness. As the air space is 5in., and the thickness of the inner and outer walls together 7in., and there are bonding bricks going through the whole thickness of the wall, I cannot see how there can be only half the materials that there would be if the same wall was solid throughout. That any common labourer would, after a day's practice be able to lay the blocks as they should be laid, with the courses evenly and properly bedded, and the "perpends. kept," I very much doubt; at any rate square blocks of concrete, each the weight of 10 ordinary bricks and of proportionate size, would necessarily require as much skill in laying as blocks of stone, especially as Mr. May, in the Building News, No. 796, deprecates the use of cement as a facing material, and leaves the external faces of his walls with the "workmanship" exposed. Nothing, moreover, is spoken of in Mr. May's letter about the cost of the cement used in beds or joints, in labour in building the walls, in making the rebated blocks for receiving door and window frames; in casting arch-blocks, or lintels, or whatever is used for covering door, window, and other openings; how provision is made for the fixing of skirtings, frames, &c., and how the chimney flues are formed, which latter must surely puzzle a labourer of one day's practice. I do not believe damp penetrates a properly constructed 9in. solid concrete wall. I have now been living for more than a year and a half in a cottage, all outside walls being of this description. It is built in a very exposed situation, and totally unsheltered by trees or by any other building, but the heaviest rains and storms have never yet caused the least internal dampness; and although unprepared to substantiate Mr. Tall's assertion that concrete is ten times stronger than brickwork, yet the strength of a 9in. concrete wall is something marvellous. Therefore, neither to prevent dampness nor for increased strength are the hollow walls of your correspondent necessary. The cost per cube yard of building with an apparatus including the fixing and removing of the latter, varies from 2s. to 3s. for labour only, according to the description of work, and most of your readers well know that no man could mould blocks, and build walls with them, for less than double such sums. I find by experience that irregular sized gravel—the largest portions, such as would pass through an inch and a half screen—makes the strongest walls built on the continuous system, provided there is a sufficient amount of smaller material with it; but to mould blocks it is necessary to have the gravel of an uniform size, and not larger than could be passed through a ½in. mesh sieve or screen, otherwise the blocks, being only 3½in. thick, would have very rough and broken arrises, by no means an unimportant matter where the superficial area of the bed is so small. The gain by using packing or rough blocks of stone, broken bricks, &c., bedded in the concrete, which does not diminish the strength although it lessens the cost, is also in favour of solid walls; in many instances no inconsiderable sum would have to be paid for carting away old and useless materials, but which can thus be profitably re-used where new concrete buildings are in progress. I have within this last year used the entire walls, chimneys, &c., of a farmhouse, the walls of which were of stone 2ft. in thickness and unfit for any other building purpose. I have not written this from any prejudice, nor from any interest whatever in the apparatus or continuous system, but having for some time past used concrete largely and in a variety of forms, and having tried to mould blocks and found that system had not the shadow of a chance against the former method, has induced me to reply to the letter of your correspondent.

T. P.

◆

Intercommunication.

◆

QUESTIONS.

[2018] SURVEYORS' CHARGES.—Would any of your contributors kindly inform me of the usual charge made by surveyors for measuring up and pricing work; also if the same per centage is charged for measuring and pricing work for labour only?—L. O. V.

[2019] NEO-GREC.—Can any of your readers inform me the true meaning of the word "néo grec," and the correct theory of this style?—Renaissance.

[2020] RESPECTING SCROLLS.—Many thanks to you for the papers on "Hand-railing" appearing in the Building News; also for your additional kindness in allowing students to put queries through your columns to the professors of that art. I am encouraged to do so by the kind answers to "H. R." respecting the bevels, given by "A Practical Stair Builder" and T. Rashley. Will either of those kind friends and brother labourers, or some others, give me and your readers some practical information respecting scrolls? The first part of a rail is the scroll, hence the necessity for a good understanding of the best way of drawing one suited alike for a vertical or horizontal position: also the way to mould it, for that is a very important consideration, especially if the rail be a "toad's-back" one. I spent some years in America, and there one sees very few scrolls; almost all the stairs finish, or rather begin, with a mitre cap on the rail, hence Mr. Riddell did not think it of sufficient importance to go into this matter. But as his book is for English readers as well as American, and scrolls are the rule and not the exception in this country, it would be advisable and acceptable to many who are studying this matter through your columns for you to allow some of your correspondents who are practical men to give their views respecting the best way of striking scrolls, and more especially, as I before said, the moulding of them. Allow me to suggest the following queries:—Are there definite rules for working up the mouldings round the scroll? What are they? How is one to proceed in the moulding of scroll where a "patras" (I believe I spell it right) is used? What should be the proportion of the patras to the scroll; and the correct position in all cases for the patras? How should vertical scroll be finished up, I mean moulded; and where, and what the size and position of "patrases" when placed on vertical scrolls? How to finish the eye of scroll of toad-back rail (or other moulding) where no patras is used?—A Joiner.

[2021] SYSTEM FOR QUANTITIES.—I should be glad to know what is the proper and most accurate system adopted by the best surveyors in London for taking out quantities. Do they in a building take out each trade separately and complete it? or do they take the carcase or constructional parts of a building by itself, then the internal finishings of each room, and lastly the external finishings, thereby mixing all the trades together, and afterwards abstracting them? I have adopted both modes myself, but cannot make up my mind which is best. The first system is less trouble to the clerks, as the latter requires a great amount of abstracting, and is more complex and tedious, and requires great care. It is doubtful, however, if the last is not better for the surveyor, who is not I think, by this plan so liable to omit anything. On the other hand, again, there is more difficulty in making a specification from the quantities taken on the second system, or taking out quantities from specification which is made. I should be very glad, however, to know which is right, and which is adopted by the best London surveyors.—Country Surveyor.

[2022] WHITE FRENCH POLISH.—Could you or any of your numerous correspondents inform me of a good white French polish for any kind of light wood, such as birch, sycamore, &c.?—Remember.

[2023] LIGHTNING CONDUCTORS.—Can any of the correspondents to your valuable "Intercommunication" column inform me how to regulate the size and description of lightning conductor according to size or height of building to which it is to be applied? I find that conductors are made of many thicknesses, but I not know what size to adopt.—H. A. B.

[2024] STRENGTHENING FLOOR.—Will some of your correspondents be kind enough to suggest some plan of strengthening a floor, the size of which is 50ft. by 18ft. between walls; the joists are 19ft. 9in. by 2in., and 16in. centre and centre, with three rows of strutting, and a ⅝in. iron rod through the centre and screwed up tight. Of course the joists are too light, and there is considerable vibration.—G. R.

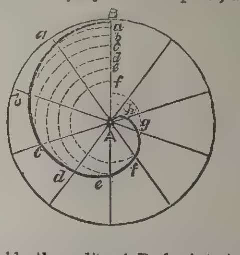
[2025] EIDOGRAPH.—Will you or any of your readers inform me how to work the "Eidograph," or of any book which treats upon the subject?—J. Hall.

REPLIES.

[1997] PRICE OF CONCRETE.—Considering that "J. L. B." gave 3s. 3d. for his ballast delivered, his concrete, wheeled and levelled, ready for the footing courses, would be worth from 5s. 6d. to 6s. per cube yard, according to circumstances. The latter is a common price in the estimates of engineers and architects.—A. P. T.

[1998] LIABILITY OF SURVEYORS.—Certainly. The surveyors are held responsible for the accuracy of their quantities by their employers, as they ought to be. But where the legal liability lies, it is not easy to find out. It generally takes a judge and jury to discover that point.—Clex.

[2003] ELLIPTICAL SCROLL.—Having decided upon the size of the scroll, describe a circle with that radius A B. Divide the circle, say into ten parts, and draw the diameters. Divide the radius A B also into ten parts, and from centre A, with radii equal to A a, A b, &c., cut the diameters in a, b, &c. Join these points and the scroll is complete.—W. W.

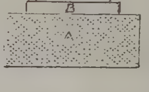


[2005] WATER SUPPLY.—With a common hand pump having 3in. copper chamber, and with pipe of 1½in. bore, I see no reason why the water should not come—if the pipe be tight—supposing the distance was twice "80 yards," and the rise twice "10ft."—W. P. B.

[2009] DAMP WALLS.—Washing a wall with cement will not prevent damp penetrating, but stuccoing with Portland cement of the best quality and good sharp sand, in the proportion of two of the latter to one of the former and finished about ¾in. in thickness, is generally an effective remedy. Probably the building stands on a wet subsoil, and no damp-proof materials are inserted in the walls to prevent the damp from rising. This is often the case when it is falsely supposed the rain penetrates the thickness of the walls. Gay's waterproofing material does not discolour the brickwork, and is highly recommended by many who have tried it; but it is somewhat expensive—about 2s. 6d. per yard superficial. If there is any doubt about the dampness rising from the foundations I should advise your correspondent to try the Broomhall Co.'s or Doulton and Co.'s damp proof course, they are both excellent for the purpose and inexpensive, about 6d. to 1s. per foot superficial according to thickness. One wall of the house might be done first and the effect tried. A course of bricks would have to be taken out just above ground level and the patent bricks inserted and made good with cement; any bricklayer would understand this, and the cost would be trifling. Messrs. Gay's, Doulton's, and the Broomhall Co.'s advertisements are all to be found in the Building News.—Wiltshire.

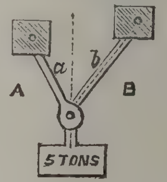
[2013] DRY FOUNDATIONS.—The best means to prevent the damp from rising is to bed over all the walls and piers a double course of slates in cement one course above the footings; or asphalte may be effectually used.—J. B. C.

[2013] DRY FOUNDATIONS.—The very best materia to put in the walls of any building to prevent damp from rising is either the Broomhall Co.'s or Doulton and Co.'s patent damp-proof course. They are of a similar character and each answer the same purposes, viz., prevent damp from rising, provide ventilation under the floors or to cellars, and bond the walls completely where used. They are made 1½in. and 3in. thick, and cost about 6d. and 1s. per foot superficial, respectively. They have an ornamental appearance, and should be built in just above the outside ground level; they can also be had any width to suit the different thicknesses of walls, and should be used over the area of all walls whether internal or external. In estimating the cost it should be remembered that where used 3in. thick they take the place of a course of common bricks, and for many reasons I prefer the thicker sort. In the advertisement column of this journal will be found the addresses of both patentees.—Wiltshire.



[2013] DRY FOUNDATIONS.—Let A represent the concrete, B C D the footing courses, on the top of which, as indicated by the thick line marked E, should be bedded a course of ½in. slate slab, or if too expensive a layer of asphalted foundation felt, either of which will prevent the damp from rising.—Foundation.

[2014] PULL UPON TIE-RODS.—I expect the sketch has got upside down; if so, the pull on A is ½ W sec. a, pull upon B = W ½ sec. b; in any case the load is divided as implied by these equations, W = 5 tons.—H. A. L.



[2015] PLANS OF COTTAGES.—The Cottage Improvement Society in the Strand, publish plans, &c., of cottages at the cost of a few shillings each, but I believe do not provide quantities except at a much higher rate. I have erected and am now erecting cottages in pairs for agricultural labourers to different plans of my own, the walls &c., being built of Portland cement concrete. I have been enabled to construct some excellent cottages as far as regards accommodation, dryness, appearance, &c., and of a very substantial character, at a moderate cost.—W. W.

[2017] MOUNTING TRACINGS.—Stretch the paper on a board with glue as for a drawing, and when dry paste surface, also paste back of tracing, and when it has expanded fully with the moisture, lay the tracing on carefully from one end, and work wrinkles and airflaws towards the edges with the palm of the hand gently. The hand must be kept perfectly dry or the tracing will smudge; cut off when dry.—H. A. L.

WATER SUPPLY AND SANITARY MATTERS.

ALFRETON.—On Wednesday week a public meeting of the ratepayers of the township of Alfreton was held at the Town-hall. The meeting was convened by the Board of Health for the purpose of considering the best means of supplying the district with water. The Chairman of the board, Mr. Roberts, laid before the meeting two plans of the means whereby water might be brought to supply the district. The first was from Butterley, by the gravitation process, at a cost of £7,000, supplying 20 gallons per head per day for the whole population. The other was that the water should be brought from a spring 80 yards below the surface on the estate of C. P. R. Morewood, Esq., at a cost of £3,000, with the additional expense of a pumping engine. The consideration of the subject was adjourned.

AN INDIAN SEWAGE FARM.—The system of sewage irrigation has been introduced into Madras, with every prospect of its turning out a great financial success. The sewage farm consists of about 37 acres of land, but of these only 2 are at present under cultivation. The land came into the possession of the Municipal Commissioners early in June, 1869, and operations were commenced before the close of the month. The site is an old swamp, where water used to collect and remain stagnant for weeks together, the ground not being more than 4ft. above the level of the sea. The soil is said to be as bad as it can be, consisting of a stiff clay, mixed with much salt and a little sand. The sewage used comes from the Perambore barracks and a village hard by, and amounts to about 5,000 gallons in the day. So far as the experiment has gone it promises well, and no objections have as yet been made on sanitary rounds.

WIMBORNE.—Tenders are invited for draining the town of Wimborne, Dorset, for laying out certain lands in its vicinity as a sewage utilisation farm, and for the erection of an engine house with the necessary engine and pumping works, in accordance with a scheme sanctioned by the Home Secretary.

STATUES, MEMORIALS, ETC.

STATUE OF THE DEAN OF RIPON.—On the occasion of the promotion of Dr. M'Neile to the deanery of Ripon, a public subscription was commenced in Liverpool for the purpose of erecting a statue in his honour. Mr. G. G. Adams, of 126, Sloane-street, was entrusted with the commission, and has now completed the work. The figure is 7ft. high, independently of the pedestal, and is executed in pure white Carrara marble. The dean is represented standing on the right leg, the left foot a little advanced, the head erect, and looking to the front. The left hand holds an open book; the right is slightly extended, in an attitude of demonstration. The statue is to be placed in S. George's Hall, at Liverpool.

LEGAL INTELLIGENCE.

BAVAGE v. GRANT.—In this case, tried in the Salisbury County Court on Wednesday week, before T. E. P. Lefroy, Esq., judge, the plaintiff lived at Idmiston, and the defendant at Stapleford. The action was brought to recover £17 12s. 7d. for building a wall, sinking a well, and doing other work. The defendant had made certain payments, but the plaintiff was not exactly certain as to the amount. The defendant said the total was £12 2s. 6d., but the plaintiff said 10s. of the money was paid on another account which was still pending. It was stated that the defendant agreed to leave the items in dispute to the decision of Mr. Caffey, architect, of Salisbury, and that gentleman went over to Stapleford, and measured the work. The defendant expressed satisfaction with the deductions made, but eventually refused to abide by them. After hearing all the evidence His Honour gave a verdict for the plaintiff for £5 0s. 1d.

Our Office Table.

EXHIBITION OF PAINTINGS AT NORWICH.—An interesting and valuable collection of oil paintings and water-colour drawings is now being exhibited at the Lecture Hall, S. Andrews, under the auspices of the East Anglian Art Union and City of Norwich Fine Art Association. The pictures include contributions from C. W. Cope, R.A., Henry O'Neil, A.R.A., and others of high degree in the world of art.

YORK CHURCH BUILDING AND ENDOWMENT AID SOCIETY.—On Saturday the Archbishop of York presided at the annual meeting at York of the above Society. Canon Hay read the report of the Committee, which showed that for the last two years there had been a marked decrease in the number of cases in which aid had been sought from the Society for the building of new churches and the augmentation of poor endowments. No fewer, too, than 98 parsonages had been erected within the last seven years.

THE LIVERPOOL ARCHITECTURAL SOCIETY.—The student members' subject for the annual competition will be a design for a town church to seat 2,000 persons (without galleries); the drawings to comprise a plan, two elevations and a section, drawn to a scale of ⅛in. to a foot; one perspective view, either exterior or interior; and the principal ornamental details drawn to a scale one fourth the actual size. No restriction is made as to style, but preference will be given (other things being equal) to designs showing originality of plan or of architectural treatment. The drawings to be sent in to the Council on the evening of the first meeting in April, 1871.

DERBY FINE ART AND INDUSTRIAL EXHIBITION.—This exhibition closed on Monday last, after having been open for six months. From statements made by Colonel Wilmot, M.P. (Chairman of the Committee) we gather that the exhibition has been a perfect success pecuniarily, and the guarantors will not be called upon to pay a single farthing. The total money receipts amounted to £5,119 2s. 5d., and the total expenditure, as estimated, will, it is hoped, leave a balance in hand of about £1,355. The total number of visitors since the commencement was 150,000.

DETECTION OF SULPHUR IN COAL-GAS.—M. Ulex says the presence of sulphur in coal-gas can be proved in the following simple manner:—Let a platinum basin be filled with half a litre of water, and the basin be heated over a Bunsen burner until all the liquid has evaporated; the basin will be found to be coated, on the outside, where it has been struck by the flame, with a dirty, greasy looking substance, which, on being washed off with pure distilled water, and tested, proves to be sulphuric acid. The author further points out that the glass chimneys used with Argand gas-burners soon become coated over internally with a white substance, which, on being washed off with distilled water, will be found to be, on testing, sulphate of ammonia. The glass panes of a room wherein gas is burned for a few evenings consecutively will, when rubbed with the fingers of a clean hand, impart to it a substance which, on the hand being rinsed in distilled water, will yield a precipitate of sulphate of baryta with chloride of barium and a brick-red precipitate with potassio-iodide of mercury.

CLEVELAND INSTITUTE OF ENGINEERS.—On Saturday week the new session in connection with this Institute was inaugurated by a dinner at the Alexandra Hotel, Saltburn-by-the-Sea. About 35 gentlemen sat down to an excellent repast. The President, Mr. Wm. Barret, occupied the chair, and Mr. David Joy filled the vice-chair.

MEMORIALS OF OLD LONDON.—Is nothing to be done with Inigo Jones's beautiful water-gate of York-stairs, at the end of Buckingham-street (asks the *Illustrated London News*)? Now that the Embankment is constructed far in advance of it towards the bed of the river it is ridiculously out of place, and its neglected condition most pitiable. The noble character of the monument and respect for its great architect's memory alike plead for its removal to, and preservation on, some suitable site. Moreover, when the estimates were made for the Embankment, the rebuilding of the water-gate in an appropriate position was included in them. Could not some appropriate and honourable place be found for it on or near the Embankment, say in proximity to Somerset-House, with the architecture of which it would not be inharmonious? Another fine London memorial (continues our contemporary), the entrance-gate and colonnade of Burlington-House, lies in still worse plight somewhere, it is said in the wilds of Battersea, if not doomed to destruction. A promise was given by the Government that it should be preserved for re-erection, and the stones were accordingly removed intact. From the way in which the monument has since been alluded to by a Parliamentary official there is little hope, however, that good taste will incite to a speedy redemption of the pledge given.

ROBBING A FOUNDATION STONE.—A singular theft has just been brought to light at Plymouth. On the 28th of July the foundation stone of the new Guildhall about to be erected in the town was laid with great public and municipal éclat. Since that time to the present the work of erection has been going on at a part of the site some distance from the foundation stone, which, in consequence, has remained as it was laid, untouched and unbuilt upon. On Wednesday morning, as one of the contractors for the building was surveying the work, he noticed that the foundation stone bore evidence of having been displaced from its socket. This aroused his suspicions as to the coins of the realm which had been placed, with the documents, in a box under the stone, and in order to satisfy himself he told the men to raise the block. It took four men to do so, the stone being two tons in weight. It was then found that the box was was still in the cavity, and that it contained the documents commemorating the ceremony, but it was discovered that every coin had been carried off. Information was at once given to the police, and in the course of a day or so the story became known, despite an effort that was made to keep the robbery a secret.

THE NEW LAW COURTS.—When the altered plan for the new Law Courts was finally settled we were all given to understand that the work would at once be pushed forward. Since that time several months have elapsed, during which time the site in Carey-street has been left surrounded by its hoardings, in all its desolation, undisturbed by any workmen. We have not heard whether or no the Government are working underground; they have certainly done nothing above, unless we may except the appearance yesterday of some half-dozen men with a few pieces of timber designed apparently for the repairs of the hoarding. Surely Mr. Lowe cannot be preparing another surprise for us when Parliament meets. If not, why does not the work go on?—*Solicitors' Journal.*

PENALTIES FOR NON-PERFORMANCE OF CONTRACT.—At a recent special meeting of the Stockton Town Council, a letter was read from Mr. Robert Heavisides, the contractor for the works at the cemetery, requesting that the sum of £289 5s., balance due to him on his contract for the erection of the chapels and the lodge be paid to him. In accordance with a motion made by Alderman Laing, the surveyor prepared a statement of the amount of expenses the committee had been put to by reason of the non-completion of the contract. From this it appeared that the amount of penalties to which the contractor was liable for non-completion of chapels and lodge was £214, and in addition to that, there was the contract for the walls, which was not yet finished, and this was 184 days over the time, and the penalty in this case was, as in the former case, £1 per day, making a total of £398 in penalties. Besides this, £6 11s. 1d. had been paid for rent of house for the superintendent, in consequence of the lodge not being ready for him, and £4 7s. for watching the cemetery, making a total of £10 18s. 1d. It was resolved to pay the contractor the sum he claimed, less only this sum of £10 18s. 1d.

THE THAMES EMBANKMENT.—Rapid progress has been made during the last three or four weeks in the works connected with the new road on the Victoria Embankment, which will run behind the Temple station of the Metropolitan Railway. The road will be in the form of a curve, one end of which will be by Somerset House, and one by the Temple-gardens. It is a fine broad road, and yesterday the men were engaged in laying down asphalte and a wide pavement for pedestrians. The leading approach to this new road will be from Norfolk-street, the railing at the bottom of which will be removed in the course of a few days, and an opening thus made which will be of great advantage to persons approaching the Embankment and the railway from the Strand. It will be an approach for carriages as well as pedestrians.

ARTESIAN WELL IN NEBRASKA.—The labours of the parties who had been boring for the last eighteen months in Lincoln, the capital city of Nebraska, for salt water, have been crowned with success. At the depth of 600ft. below the surface, in a stratum of sandstone, a lead of the great subterranean sea of salt water was recently struck, and the briny torrent came struggling up around the auger and shot into the air some 8 or 10ft. It has since flowed strongly and steadily, and with great force and increasing strength, forming a briny rivulet. It is believed by the experts who have seen the flow that when the auger is withdrawn and tubing inserted, a stream of water will be projected from the well to the height of 50ft., making it the most magnificent artesian well of salt water in the world.

A CANADIAN WOODEN RAILROAD.—A railway which cost only 6,000 dols. per mile, including right of way, grading, track and rolling stock complete, is certainly a novelty. That is the cost of the Quebec and Gosford wooden railway, if the statement of the President is to be accepted. This road is twenty-five miles long; gauge, 4ft. 8½in.; speed, twenty to thirty miles an hour; length of rail, 14ft.; depth, 7in.; thickness, 4in. Each rail rests on seven sleepers, to which it is fastened by wedges, so that it can be easily taken up at any time. The locomotive now used on the Quebec and Gosford Railway weighs 21 tons, loaded, without the tender. This road will be completed next month, and ready for traffic. It is very satisfactory to know that there is an immediate prospect that wooden railways will be practically tested in Canada; should they prove to be so well adapted as it is believed they are to accomodate new districts where the traffic is limited, they will come into large demand to act as feeders to the iron roads.

MEETINGS FOR THE ENSUING WEEK.

MONDAY.—*Royal Institute of British Architects.*—Opening meeting of Session 1870-71. 8 p.m.

Society of Engineers.—"On the Economics of Railway Maintenance," by Mr. E. S. Crompton. 7.30 p.m.

TUESDAY.—*Institution of Civil Engineers.*—"Description of the Cofferdams used in the execution of the No. 2 Contract of the Thames Embankment," by Mr. T. D. Ridley, A.I.C.E. 8 p.m.

SATURDAY.—*Associated Arts' Institute.*—Business meeting. 8.15 p.m.

◆

Chips.

The opening meeting of the Royal Institute of British Architects for Session 1870-71, takes place on Monday evening next.

Mr. Holman Hunt, who is still in Jerusalem, has made good progress with the picture which has for some time past occupied his attention. His health is re-established. He will probably, says the *Athenæum*, visit England for a short time in a few months.

£1,400 and a site have been given towards the erection of a new church for the parish of Northam, Hants.

The new Corn Exchange at Wareham will be publicly opened on the 15th inst.

A new burial ground for the village of Bourton, near Gillingham, was consecrated on Tuesday week.

A correspondent of the *North Wilts Herald* asserts that the sanitary condition of the town of Cirencester is simply deplorable. There is no sewerage, and the town is honeycombed with cesspools.

It is contemplated to greatly enlarge the Norfolk and Norwich Hospital situate in Norwich.

The town surveyor of Southmolton has resigned.

◆

LATEST PRICES OF MATERIALS USED IN CONSTRUCTION.

TIMBER.

		£	s	£	s
Teak	load	£12	10	13	10
Quebec, red pine		3	15	4	15
,, yellow pine		4	0	4	10
St. John N.B. yellow		0	0	0	0
Quebec Oak, white		6	0	6	10
,, birch		3	15	5	0
,, elm		4	5	5	5
Dantzic oak		4	10	6	15
,, fir		2	15	4	10
Memel fir		2	15	4	0
Riga		3	3	3	10
Swedish		2	13	3	0
Masts, Quebec red pine		4	0	5	5
,, yellow pine		4	0	5	5
Lathwood, Dantzic, fm		3	10	5	10
,, St. Petersburg		5	0	6	10
Deals, pr C., 12 ft. by 3 by 9 in.,					
Quebec, white spruce		12	0	17	0
St. John, white spruce		12	0	14	0
Yellow pine, per reduced C.					
Canada, 1st quality		18	0	19	10
2nd do.		12	15	13	10
Archangel, yellow		11	10	13	0
St. Petersburg, yel.		12	0	13	0
Finland		£7	0	£8	0
Memel		0	0	0	0
Gothenburg, yellow		9	0	11	0
,, white		8	0	9	0
Gefle, yellow		10	10	12	10
Soderham		8	10	12	0
Christiania, per C., 12 ft. by 3 by 9 in. yellow		10	0	12	10
Flooring boards, per sq. of 1in., first yel		7	6	10	6
First white		7	0	9	6
Second qualities		6	0	7	0
PUMICE STONE	pr ton	6	0	8	0
OILS, &c.					
Seal, pale	per tun	35	10	36	0
Sperm body		80	0	0	0
Cod		37	10	38	0
Whale, Sth. Sea, pale		36	0	0	0
Olive, Gallipoli		48	0	48	10
Cocoanut, Cochin	ton	43	10	44	0
Palm, fine		39	10	0	0
Linseed		30	0	0	0
Rapeseed, Eng. pale		45	0	0	0
Cottonseed		29	0	35	0

METALS.

LEAD:—

		£	s	d	£	s	d
Pig, Foreign	per ton	£17	10	0	£0	0	0
,, English W.B.	do	20	0	0	20	5	0
,, Lead Co.	do	19	15	0	20	0	0
,, Other brands	do	18	0	0	18	5	0
Sheet Milled	do	19	15	0	20	0	0
Shot, Patent	do	21	0	0	21	0	0
Red or Minium	do	19	15	0	20	10	0
Litharge, W.B.	do	0	0	0	0	0	0
White Dry	do	27	0	0	0	0	0
,, ground in oil	do	0	0	0	0	0	0

COPPER:—

		£	s	d	£	s	d
British—Cake and Ingot	per ton	£67	10	0	0	0	0
Best Selected	do	69	0	0	0	0	0
Sheet	do	71	0	0	73	0	0
Bottoms	do	75	0	0	0	0	0
Australian	do	68	0	0	71	0	0
Spanish Cake	do	0	0	0	0	0	0
Chili Bars, cash	do	65	0	0	62	0	0
,, Refined ingot	do	67	0	0	69	0	0
Yellow Metal	per lb	0	0	6¼	0	0	7

IRON:—

		£	s	d	£	s	d
Pig in Scotland, cash	per ton	£2	11	6	0	0	0
Welsh Bar, in London	do	7	2	6	7	10	0
,, Wales	do	6	10	0	6	12	6
Staffordshire	do	7	10	0	8	0	0
Rail, in Wales	do	7	0	0	7	10	0
Sheets, single in London	do	9	10	0	10	5	0
Hoops, first quality	do	8	10	0	10	5	0
Nail Rod	do	7	5	0	7	15	0
Swedish	do	9	10	0	9	15	0

◆

Trade News.

TENDERS.

BELVEDERE.—For building public rooms. Mr. A. R. Pite, architect:—

Whiting	£2194
Nightingale	1573
Cowland	1540
Butler	1489
Blake	1470
Tongue	1279

BLACKFRIARS.—For shop and stores for Messrs. Spiers and Pond. Mr. E. Powell, architect, 1, Walbrook buildings, E.C.:—

Barrett & Wickerlow	£8440
Jackson & Shaw	7717
Moreland & Son	7622
Turner & Sons	7541
Avis & Roe	7494
Merritt & Ashby	7445
Brass	7436
Colls	7380
Nightingale	7363
Fish	7200
Newman & Mann	7186
Browne & Robinson	7000
Jewell & Sons	6993
Foster	6927
Henshaw	6837
Condett	6760

BROADSTAIRS.—For new chapel. Messrs. E. Habershon and Brock, architects:—

Osborne	£1440
Nightingale	1398
Wilkins & Sons	1351
Hiller	1335
Barwick	1318
Starkey	1270
Snell & Trayte	1045

CROYDON.—For Congregational Church:—

Pollard (accepted)	£2049

HANLEY.—For house and two cottages, for Wm. Harding, Esq. Messrs. R. Scrivener & Sons, architects:—

Clewes	£1430
Bailey	1418
Collis & Hudson	1380
Bennett & Cooke	1305
Harvey	1320
Barlow	1230

INTERNATIONAL EXHIBITION OF 1871.—For the supply of glass cases and plate glass to be used at the exhibition:—

For the frames.

	£	s	d
John Drew	£1725	15	0
Howard & Sons	1557	1	5
George Smith & Co.	1467	0	0
Lucas Brothers	1446	8	0
Johnstone, Jeanes, & Co.	1315	6	0
Gillow & Co.	1271	4	8
Frederick Sage	1176	17	10
Holland & Sons (accepted)	1167	15	6

For the glass.

	£	s	d
Thames Plate Glass Company	£512	11	7
William Ramsay	428	18	0
London and Manchester Plate Glass Company	411	0	0
Savoy Glass Company	406	14	0
Birmingham Plate Glass Company	409	6	5
Willmore Brothers (accepted)	384	16	10

LONDON.—For S. Philip's Schools, Arlington-square. Mr. Goff, architect. Quantities supplied:—

Cohen	£3350
Jackson & Shaw	2946
Marwick & Thurgood	2836
Crabb & Vaughan	2842
Chappel	2799
Snowball	2771
Rolland	2767
Wood	2750
Colls & Co.	2723
Crockett	2629
Wright	2625
Marion	2618
Hill, Keddell, & Co.	2615
Winship	2590
Myers	2588
Newman & Mann	2586
Cole	2575
Bishop	2545
Nightingale	2525
Hughesden	2495
Henshaw	2443
Blease	2378
Gibbs & Son	2339
Parsons & Telling	2235

LONDON.—For additions, alterations, and repairs, 15, Harrington-square, Hampstead-road. Mr. J. K. Colling, architect:—

Kelley Brothers	£605
Laidlaw	572
Nash	568
Mann	565
Oxford	557
Nightingale	549
Eyers	541

LONDON.—For stone staircase, vaults, &c., in rear of Nos. 301, 302, Strand. Mr. J. H. Rowley, architect. Quantities supplied by Mr. T. T. Green:—

Thompson	£1645
Snowdon	1446
Merritt & Ashby	1438
Crabb & Vaughan	1414
Henshaw	1395
Brass	1392
King & Sons	1379
Kelly Bros.	1373
Scrivener & White	1353
Colls & Sons	1286
Sharpington & Cole (accepted)	1280

MANCHESTER.—For new Calvinistic Chapel and Schools, Heywood street, Cheetham, Manchester. Mr. Richard Owens, 2, Breck-road, Liverpool, architect. Quantities by Mr. S. Crowcroft, Manchester:—

Thomson, City-road	£2606
Tickell	2581
Jones, Rhyl	2494
Davidson	2460
Todd	2439
Troggett	2431
Parry	2398
Davies & Mawdsley	2369
Heard & Eaddies	2355
Thomson, York-street (accepted)	2327

MARGATE.—For Primitive Methodist Chapel and preacher's residence, King street. Mr. Alfred W. Phillips, architect. Quantities not supplied:—

	£	s	d
Wigmore (Walham Green, S.W.)	£1649	10	0
Garner (Margate)	1380	0	0
Hall (Brighton)	1370	0	0
Paramor (Margate)	1350	0	0
Osborn (Ramsgate)	1098	0	7

SUSSEX.—For a new infirmary, new board-room and offices, and alterations at the Steyning Union Workhouse, Shoreham, Sussex. Mr. B. H. Nunn, surveyor. Quantities supplied:—

	£	s
S. Burston & Burfoot	£5047	0
Nadin	3995	0
Bushby	3961	0
J. & A. Stenning	3922	18
Nash & Co.	3828	0
Watson	3649	0
Smith	3624	0
Lockyer	3560	0
John Chappel	3494	0
Dalby	3200	0
Miles	3145	0
Blackmore (accepted)	3099	0
William Chappel (withdrawn)	2790	0

WINDSOR.—For addition to house, near Windsor. Mr. C. H. Howell, architect, Quantities by Mr. J. Scott and Messrs. Widnell & Trollope:—

Thorne	£6723
Kempsall	5536
I'Anson	5514
Higgs	5443
Holland & Hannen	5287

◆

CONTRACTS OPEN FOR BUILDING ESTIMATES.

DOMINION OF CANADA. — INTER-COLONIAL RAILWAY. Nov. 21.—For the supply of 40,000 tons of Bessemer steel rails, to be delivered in 1871 and 1872, with the necessary quantity of fish-plates and bolts and nuts. Messrs. Morton, Rose, and Co., Bartholomew House, Bartholomew-lane, E.C., London. Messrs. A. Walsh, E. B. Chandler, C. J. Brydges, A. W. McLelan, Commissioners, Ottawa Canada.

MIDLAND AND LONDON AND NORTH-WESTERN RAILWAY COMPANIES.—Ashby and Nuneaton Joint Railway, Nov. 15.—For the supply of the following materials, namely—6,700 tons of steel or iron rails (at the option of the joint committee); 3,300 tons chairs, 90 tons of spikes; 60 tons of bolts and nuts; 270 tons of fishing plates; 183,000 tons of oak keys; 366,000 tons of oak tree-nails. James Williams, secretary, Derby.

CHELLASTON, Nov. 12.—The proprietors of the Chellaston Plaster Mines, situate at Chellaston, in the county of Derby, invite tenders for the sinking deeper of an existing shaft in the mines.

HALIFAX CORPORATION WATERWORKS, Nov. 14.—Hebden Extensions.—For the Widdop Reservoir and Main Conduit thence to Pecket Well.—Contract No. 7. J. E. Norris, town clerk, Town Hall, Halifax.

NORMANTON, Nov. 7.—INFANTS' SCHOOL.—For building the above school. The vicar, Vicarage, Normanton.

STAINES, Nov. 7.—For a tower, with spire, to be erected to the Church at Wraysbury, near Staines. Rev. Henry West, Wraysbury, near Staines.

NEWTON HEATH, Nov. 17.—For sewering (where required), levelling, paving, flagging, channelling, and otherwise completing Varley-street (from Silver-street to the Rochdale Canal), within the said district. John Nield, clerk to the board, Newton Heath.

S. MATTHEW (Bethnal Green), Nov. 7.—For the erection of a new building in connection with the workhouse, Waterloo-road, Bethnal Green. William Tullett Howard, clerk to the board, Bishop's-road, Bethnal Green.

ACTON LOCAL BOARD, Nov. 8.—For making up Osborne-road. Edward Monson, C.E., surveyor to the said board, Acton.

DAVENTRY, Nov. 9.—For the erection of the proposed Assembly Hall at Daventry, Northamptonshire. Mr. T. H. Marriott, Daventry.

GREAT EASTERN RAILWAY COMPANY, Nov. 8.—For the supply of 6,000 tons iron rails, 350 tons fish plates. J. B. Owen, Secretary, Bishopsgate Terminus, London, N.E.

LANCASHIRE AND YORKSHIRE RAILWAY COMPANY, Nov. 15.—For the erection of iron footbridge, at Halifax Station. Wm. S. Lawn, secretary, Hunt's Bank, Manchester.

HORNSEY LOCAL BOARD, Nov. 11.—For the supply of the following materials, to be delivered on the roads of the district, between the 31st day of October, 1870, and the 31st day of October, 1871, namely, granite, rag flint, ballast, and hard core. Also for pavior's work, for the supply of paving, curbing, and channelling. Wm. Hammond, clerk.

LEEDS, Nov. 10.—For two good houses in Malvern-road, Beeston-hill. Richard Towse, architect, Dewsbury-road, Leeds.

LONDON, Nov. 18.—For the supply of 100 cast-iron mangers, galvanised or plain, for the General Omnibus Company (Limited). A. G. Church, general manager and secretary, 6, Finsbury-square.

SALFORD, Nov. 8.—For slating three iron roofs at the Liverpool street works. Edwin Andrew, town clerk, Town Hall.

◆

BATH STONE OF BEST QUALITY.

RANDELL, SAUNDERS, and COMPANY, LIMITED. Quarrymen and Stone Merchants, Bath. List of Prices at the Quarries and Depots; also cost for Transit to any part of the United Kingdom, furnished on application.

BATH STONE OFFICE,
Corsham, Wilts.

[ADVT.]

THE BUILDING NEWS.

LONDON, FRIDAY, NOVEMBER 11, 1870.

MISS BURDETT COUTTS AND THE IMPROVEMENT OF LONDON.

IMPROVING London would appear to divide itself into three quite distinct items, or three distinct objects have to be kept in view. First, the improvement of the main thoroughfares, such as Oxford-street, Holborn, Cheapside, and the Whitechapel and Commercial roads, leading, as they do, from west to east of London, and right through the middle of it. It would seem to be almost impossible to divert the traffic through this line of road (and others like it) from it to any other. The second means of improvement lies with the householders and shopkeepers themselves, each one for himself, and this, of course, is beyond the reach of help or assistance of any kind. The public do this for themselves. But the third means of improvement is the most difficult to deal with, and has to do with the bye-streets and poor neighbourhoods, of which there must be so many in all great cities, and it is this which Miss Coutts wishes to make some impression on, and which she has in some neighbourhoods already tried to do. We cannot help thinking, knowing the poor parts of London well, that she has, up to this, most lamentably and wofully failed, and we cannot help asking who it is, or what body it is, that she consults, and whose advice she takes, for it is impossible to suppose that she actually goes into narrow streets and courts, and looks about for herself, and personally sees into what the poor people want. But of all her mistakes Columbia Market is the central one and the chiefest, and most sure it is that had she consulted any one who really knew anything about London and its needs, she would never have thrown her wealth away upon it. May we offer a few suggestions?

What is a London market? It is a very curious circumstance that the markets proper of London do but comparatively little of its business, almost nothing indeed compared to the whole of it. Why, wonderful as it seems, and we ask Miss Coutts's attention to the fact, the two best markets in London at this moment are both of them shut up and barred like prisons on Saturday night—Billingsgate fish market and Covent Garden fruit market—while on this Saturday night all the poor man's tradings on his own account and for himself and his family are actually going on elsewhere. Practically, the London working men and women have no markets except those that they make for themselves, as this excellent lady may see if she will be at the trouble to visit them. The New Cut, from the Westminster-road to Blackfriars, is an odd kind of double market, so to express it, for it holds the shops of the tradesmen who occupy the houses on each side of it, and also the long double line of hucksters' stalls and barrows immediately beyond the pavement, and indeed in the very gutters themselves. This is one of the most populous markets anywhere to be found, and nothing certainly that Miss Coutts could do would induce any of the tradesmen—the regular shopkeepers—to go away from this line of traffic and business to any other and less populous spot. If the very Houses of Parliament close by were to be turned into a market they would not go to it, nor would the population of the Marsh go to them. Nay, further, if Miss Coutts were to buy the Palace of Westminster, and let it out in small sections at mere nominal rents to hucksters and costermongers, but few of them, we can assure her, would go there, for the simple reason that their poor customers would not travel away from the regular line of lighted thoroughfare and cheap business, not even for a palace location. These people will keep together the regular tradesmen, the small barrow traders or costermongers, and the population of the place which live in it, and in all its surrounding narrow streets and courts, and where one lives and goes about all follow. If you want to improve a market like this you must go to it, "and begin improvement with one single house."

Now had we the means and felt inclined to improve the Lower Marsh, it would be somewhat in this way that we should go about it. Take the narrowest, and dingiest, and most mud-begrimed, and ragged filled streets, of which there are so very many—almost any street will do—and buy two or three of the houses out and out. Do not pull them down, but raise them one or two or more stories as the case may be; put them into good and neat repair, and then let them out again, probably to the same tenants, in the regular way of business, and without any sort of attempt at charity or favour to any particular class, and just see what would come of it. All we would plead for in the way of architecture, or ornament, or speciality of any kind, would be to alter the line of roof, and to "gable end" the street, and thus to throw a little character into it if possible, by the mere fact of putting the necessary construction to some pleasureable service. No attempt would be made in this plan of improvement to widen the street, or to alter its direction, or to rename it, or to drive away the inhabitants, or disturb the regular traffic of the place, but only and simply to add to the narrow house accommodation, and to give to the street a little—shall we say it?—Gothic character, or any character at all. Now all this might be done, and a great deal more, at a tithe of the cost Miss Coutts has been put to so uselessly in the building of the stupid Columbia Market, and as nothing in the vast sum which Mr. Peabody gave to the London poor (as they are called—somewhat at random it is to be feared), and without any special knowledge of the work needed. What next would follow in all human probability would be this. As soon as the present landlords of the remaining houses in this narrow street found that these two or three of them, thus cheaply improved, let readily, and in preference to others, they would improve their own property in like manner, doing of course as little as possible, but still something. Now we have a kind of Arab horror of charity, but there can be little or no doubt that to improve the narrow ways of London it is almost absolutely necessary that some one should begin by some act of giving; some one must volunteer to do this work of the pioneer in the deserts of London. One pound of right is worth a ton of charity, and in this mode of doing work no one would feel the gift; they would only see the result. It would be in very truth giving with the right hand without the left hand knowing of it. The markets will take care of themselves, and it is mere waste of money to attempt to do anything with them. It is the houses and homes of the working population that must be the first thought and the keynote of all or anything that comes after. But still, it must be ever repeated, do not attempt to do too much, or to make things look too new and smart, or the very people who most need help will all run away and leave the "improvements" to those who can do the work for themselves. If we had our own way and could go to work as we listed, it would be in such streets, if any know them, as Charles-street, Drury-lane, where there really seems to be no end of inhabitants, and which looks for all the world like a vast wash-house, for out of all upper windows projects a long pole with drying clothes of all colours and hues, shapes and sizes. It is one of the very few picturesque streets of London, and is so consequent on the very excess of its poverty and the density of its population. Another street, with yet a little character and interest left in it, is what is now called Duncan-street, in times of yore Monmouth-street; why the dull Board of Works altered the time-honoured, almost poetic name of this famous street, immortalised by Carlyle and Dickens, it would be hard to tell. It is a kind of Jewish street, all the kitchens are shops and warehouses of old left-off coats and shoes, furbished up into "better than new." Would that Miss Coutts would improve but one of the worst of these houses, and bring back, which she might so well do, the old name of the street. Another special street, or rather nest of streets, a favourite of ours, and which probably none of our readers have ever yet entered, is a group near the Bow-road Station, Bean-street, Flint-street, Gun-street, and a host of narrow courts, literally packed with people, who would seem to own not only the houses, but the very streets themselves. for whole lines of trucks and barrows line the gutters and even middle of the streets, and the houses are alive with humanity. How thickly they are stowed away in the interiors of these dismal homes need not be said: their name is legion. To name Whitechapel, and Shoreditch, and Mile End, is enough, for all certainly have heard of them, if no more; and it is truly melancholy to think for a moment of the efforts now being actively made to induce Miss Burdett Coutts to extend her liberality to the helping to widen the main thoroughfare of the Shoreditch High-street. In the first place there is no need of it, for all goes on very busily and comfortably, even on a Saturday night, for the people like the crowd, and it certainly looks well, and one wonders how it is that no one has attempted to paint the busy and Rembrandt-like scene; and in the next place this should be, and is, the work of the well-to-do tradesmen of the district. It will not help the poorer people a whit, it may destroy them and the traffic, and the market perhaps, and may be, too, the present colony of tradesmen themselves, but will not help surely the poor of the place. Let Miss Coutts think well of this before it is too late and her money gone, as it is in Columbia Market, no one being in the end in the least benefited but the contracting builder! We have ventured thus to offer a hint or two on this most important subject of the improvement of London, as more particularly respects the poorer class of its more densely-inhabited districts, and have named one or two of them, but of course not a hundredth part of the whole; but there is yet one thing more which cannot be passed by. It is this: that there is not now, there has not been, nor can any one see his way to any plan in the future for preventing, if that be the best word, the crowding together of so many human beings in single small rooms. Build how you may, you will always find in all such poverty-struck and densely-inhabited places whole families living in one small room. Many, very many, have we visited at all hours, and know well how those in them live. *Bedsteads* they do not seem to care about. A mattress on the floor for one or two or more, with as much of covering as can be got, satisfies them. Indeed the more the better, and certainly the warmer. Nature truly would appear to dictate to such the best way of surmounting difficulties, for as all animals without exception, in a natural state, herd together for warmth, and to defy weather, so do these of the lower strata of society, and which it must be remembered do all its dirty but still necessary work, herd in like manner together, and from the same causes. We have seen rooms where it would be absolutely *impossible* to live or exist at all *but in numbers*. A child in the corner of such apartment would perish of cold and draughts, but three or four huddled together in the same corner, like young rats, covered with their own clothing, defy both, and bravely conquer that nature which made both them and the cold winds, and laugh at the society which pretends to pity them but will *do* nothing. How much might Miss Coutts do and at how little cost if it only be done in the right way! One thing more we ask her to reflect on, as it shows how good nature may fail. Everybody who reads this, she herself, kindly-hearted as she is, must have commiserated the state of those unhappy ones who in all weathers are seen without shoes,—stockings are unknown in this desert tract. Barefooted they go. But, gentle reader, all such compassion and pity is thrown away and idly wasted, for not only are all such totally indifferent to foot coverings, but it is painful to wear them. Give them shoes and they sell them. In no army-surrounded and besieged city is the struggle for existence fiercer than it is in those parts of mighty London which Miss Coutts wishes so earnestly to "improve," but if you ask of those who are in the very thickest of this fight for life, which is most successful and hopeful, you will find it is those who are least encumbered with armour. Swiftness of movement is the soul of pure street trading and efforts at selling, so that those without shoes must needs run quicker than those with! Old Homer's heroes never felt the truth of this need of swiftness more thoroughly than the "ragged" of London. We mention this because Miss Coutts and others have wasted, as we take it, a good deal of good nature and sterling coin in the endeavour to "clothe the naked." It is useless. To *house* them better is possible, and not only possible but would be a real act of permanent utility, and a step at least towards the improvement of London, but not, as we have said, by the building of new houses or markets, but by adding to and repairing as simply as possible those already in existence; not by the building of new streets or the renaming of old ones, but by the simple and artistic process of adding a little to the art and character of such streets by taking advantage of constructional necessities.

C. B. A.

LUMP-CONTRACTS AND THEIR SUBSTITUTE.

By Solomon Set-Square.

A GLANCE at the above heading may suggest the question, what is there so essentially bad in a "lump-contract" that it should need not merely a reform but a remedy or substitute? A lump-contract is the very thing that nine people out of ten desiderate. It is to them a sovereign preventive of future misunderstanding and dispute. Reckless parliamentary agents and engineers will indeed call a cab off a stand, jump into into it without asking "what's to pay?" and ride ever so far "to fair schedule of prices or unfair measure and value;" but steady-going people will do no such thing. Pater, or any way mater-familias, will insist on cabby's definitively tendering for the work in a lump-sum. The system is being applied wherever practicable to all wants of daily life. It is the desideratum, as we have said, of nine people out of ten.

This being so, let us inquire who are the people who may be said to be dissatisfied with this very popular system. We have but to look over the past month's pages of our own and of every other professional journal to see who they are. They are our architects, builders, and clients; and to this list of malcontents we will add our building-surveyors. These all inveigh, more or less, against the scandals that somehow (with no one to blame, as usual) have beset the highly popular system. There is hardly an architect, a builder, or a building-surveyor of any business experience that cannot narrate grievous cases of squabbling or of fraud that have arisen out of the abuses of the system. If a lump-contract ever does end satisfactorily "to all parties concerned," it is perhaps because the architect and his builder, both men of long practice and experience, have fallen in for the nonce with a real sucking-dove for a client.

It is a disgrace to architects and building-contractors that a man with capital and a wish to invest it in building cannot even touch brick and mortar without exposing himself to a sea of troubles. People must build, however, and some system must be devised for their doing so in tolerable comfort and under ordinary conditions—that is to say, with clients who will have their whole pound of flesh, and a little more if they can get it; architects who are ignorant, timid, or unscrupulous, and builders who will scamp work, if you'll let 'em. Such as these there will always be till the millenium; and we can't wait for it. We must go on building. The only question is how—by day-work, by schedule and measurement, or by lump-contract?

Professional readers know well enough that building operations are too intricate, too much beyond the ken of the lay public, to afford one even a colour of excuse for advising a client to build by day-work. Builders are honest men in their way; but only in Utopia could we hope to start a large building by day-work, if we cared at all to know when it would be finished or what it would cost. Architects, too, are honest men, but most of of them are a trifle—just a trifle—too selfish and too lazy to be trusted with any large building to be erected by schedule and measurement. Some forty years ago the experiment was tried, or was in full force. It worked well enough for the builders, often ruined the clients, and demoralized the architects. Buildings were roughly designed with elevations indeed, but very often without sections, nearly always without specifications, always without details, and commenced with, if any estimate at all, a mere approximate estimate founded on these loose documents, not worth the paper it was written on. The building "went up," without too many drawings to elucidate its constructive requirements. The works were measured up at irregular intervals, and there came in time an inevitable veritable "day of wrath," quite "unbeknown" to the client, and equally so to the often young and thoughtless architect, when the structure, perhaps only wall-plate high, had consumed the whole intended outlay! Then it was that the architect, erst on such good terms with his enraged client, could scarce look him in the face, much less consult him about the completion of the work. In those bad old days, in fact, the works were not always completed. They remained in carcass for years as So-and-so's "Folly," like the palace seen out of window in Hogarth's "Marriage à la Mode," to be pulled down again for very shame, or at best to be bought up and completed somehow or anyhow by some bargain-driving speculator; and then in time the "folly" of Mr. So-and-so was forgotten. There have occurred many such cases. This system (of schedule and admeasurement) might be all very well if every Mecænas were a Vitruvius in himself, and both could and would look after his architect and keep him up to the mark with his drawings; but to say this is to beg the whole question, as such men would not employ architects at all—why should they? The system came ultimately "to grief." The public, who wanted to build, would not have any more of it; and they were wise. It was not the builders, nor the architects, but the public that held the purse that some forty years ago set aside the measurement system, and insisted on the introduction of the existing one of lump-contracts. This latest method answers the purpose of public bodies or committees. These gentlemen rejoice to hear they have succeeded in erecting an exceptionally cheap building by the loss of an unfortunate contractor, the victim peradventure of some omission in his tender, or of what is worse, a too scanty bill of quantities, with which, as matters go, the "board" and their architect have "nothing whatever to do." Some very saddening tales of this kind might be narrated, especially in relation to edifices built by lump-contract for parochial and cemetery boards. The hardness and insensibility of these boards is extraordinary. They ruthlessly cut down the commission of their architects, yet make its payment subject to impossible conditions: they encourage the employment of "scamping" or "jerry" contractors; and, at last, have fallen foul of the very building surveyors. Quite recently they have taken to the disreputable course of advertising for the lowest tender for computing the "quantities;" which, if they would permit these documents to be recognised and incorporated with the specification (as was done in the case* of the Royal Exchange) might be all very well. But the surveyor, "fortunate" enough to get the job at a preposterously low commission, is made by these worthies to execute a written contract, guaranteeing the efficiency of his ill-remunerated services, for which he is to be responsible, not to them, his employers, but to *the builders!* With this last feat of "Bumbledom," we have the entire system of lump-contracting brought to its climax, and fairly run to seed, like German marriages for our princesses. These overreaching parochial boards never recede from a cunning position of fence once taken. Even now we hear of ratepayers complaining that any building surveyor (however substantial or responsible) should receive 2½ per cent. for issuing a bill of quantities; and no wonder, when workhouse guardians and asylum committees can get these documents issued by a surveyor "responsible to the builders" for a commission of three quarters, or of even half, per cent! It would be the sheerest waste of words to explain in a professional journal how nothing short of the creation of a body of swindling surveyors is to be expected from the adoption of this latest parochial movement. People who will do work for nothing, or next to it, have usually nothing to lose. By a cruel refinement these workhouse and school boards ferret out a special class of men. from the usually respectable ranks of the Metropolitan building surveyors; and, having got them and well skinned them, they hand them over in their helplessness and impecuniosity to—ye gods, be "*responsible* to the contractors!" Can anything be more subversive, in its way, of public credit? Would any one of these committee-men set about insuring *his own life*, or *his own house*, on the like principle?

Individual capitalists not infrequently act quite otherwise; and express their disapprobation of the lump system. They require simply to have in a building contract all they bargain for, and to pay justly for all they have. They find that by this mode of contracting, replete with its last invented evils, they obtain neither of these objects; while architects, contractors, and surveyors, are all being ground to the dust by the system.

The plain truth is, that a lump-contract, popularly held to be conclusive and unalterable, is not so at all. It is a delusion to expect it to be so, as every architect knows perfectly well. No building we ever heard of has ever been completed as first designed and contracted for, or ever been paid for by the discharge of its original contract price. The reason is plain enough to professional men; but the unprofessional public cannot understand it. An architect's client orders a phaëton, or a gold watch, to be respectively built and manufactured at an agreed price. Each order is duly executed and for the settled sum. The cash is paid down, and there's an end of the matter. "Why," says he, "can't I have for an agreed sum a house, or a town-hall (or a lunatic asylum, while I'm about it), supplied fit for use and occupation like the watch and the phaëton?" We all know why he can't; but *he* doesn't: he thinks it very hard, and builders and architects the greatest humbugs in existence. Let us ask our lively First Commissioner what he really thinks about them. We all remember how this very question bothered the right honourable gentleman's predecessor, Lord Llanover; and what a martyrdom he imposed on Sir Charles Barry in his furious efforts to get to the bottom of the mystery. He discovered that Sir Charles was always altering his details, like a modest and thoughtful man as he was; and he made up his mind, did Lord L., to issue no more orders for Government works till every one of the details had been drawn out and irrevocably settled upon—a thing nearly impossible, and if possible, preposterous. Which of us would like to see *Mr.* Charles Barry's Gothic details of 1833 brought out of a pigeon-hole to be applied to the completion of *Sir* Charles Barry's Houses of Parliament?

---

* See Donaldson's "Handbook of Specifications."

This bugbear of extras to a lump-contract sits more or less enthroned in every English architect's office—an anxious fact for architects, and a very, very serious one for contractors. It is at the bottom of nearly all the heart-burnings and squabbles that from time to time crop up in the building world. Many an architect who, if cash were plentiful with him, would sacrifice his own private resources rather than see his fair dealing contractor undergo a known loss of payment for an "extra," will shrink in cowardice from certifying for it in the face of a greedy unscrupulous board or committee. He, à la Barry, will con over and superadd to his details; but alas, when it comes to making up the balance-sheet, he will hesitate to disturb the phaëton and watch theory he well knows his client has imbibed.

Some builders and the British Architects are, so we hear, going to furbish up and rehabilitate the lump-contract system. They will never succeed. It has become so rotten, especially in the metropolis—mainly from the shortcomings of the Institute itself—that we quite anticipate it will collapse, like the day-work and the measure and value systems that preceded it. Architectural practice, as town (not country) architects are bent on pursuing it, is tabooed in high places; architects themselves are pooh-poohed and set aside with a vengeance. Why is this? Because architects—Institute architects especially—not only allow themselves* to ignore the money-details, the quantities, the prices, &c., that make up the lump-contracts they have to administer, but have grown actually proud of their ignorance. They leave the details of their inevitable extras and omissions to be settled how they best may, between builders and building surveyors, pluming themselves, like the roysterer in the play, on being

> Ill at reck'ning:
> It recks o' th' spirit of a tapster.

Meanwhile they are being, year after year, pushed out of their true places as arbiters in what ought to be their own "little courts of equity," to which both builders and capitalists ought to resort with confidence for impartial treatment. An architect who "cares for none of these things," with Gallio, will, of course, never be consulted about them. He will settle down into a simple designer, or, worse, a mere draughtsman, with his pencil and his sweet voice subservient to his patron. His hand will be naturally against every builder, and the hand of every builder (with a surveyor at his back) will be against him. It is not a satisfactory state of things; nor can it be remedied by the drawing up of arbitration clauses, nor yet by the binding up of the quantities (not those of the architect but of the contractor's surveyor) with the specification. These expedients will only tend to still further complicate the already intolerable system. Is there no remedy by which we may hope to keep honest patrons, architects, builders, and "quantity-takers" unscathed by any of the evils we have depicted? Can we not dispense with the unelastic, "unalterable" lump-contracts, which the client will always persist in regarding as final; and the equally unelastic bill of quantities, which the (London) architect will not even look at, and which the contractor, under the circumstances, will not have overhauled to his prejudice?

◆

ALEXANDRA PARK AND PALACE.

THE Crystal Palace of 1851, represented by the People's Palace at Sydenham, has set a national impulse in action, which cannot be too strenuously promoted by all who desire the advancement of useful knowledge, and the elevation of taste among the people. In like manner, the International Palace of Industry and Art of 1862 is about to find a fitting memento—lasting and useful we trust—in the People's Palace and Park just completed at Muswell Hill, for the improvement and direct enjoyment of the inhabitants of the north of the Metropolis. Both palaces are needed, and both have a field of importance open to them without in the slightest interfering with each other, or their separate spheres of usefulness. Unfortunately, adverse circumstances have materially hindered and almost threatened the prospects of the latter. The financial crisis and the present Continental war have seriously impeded, and even now prevent the plans of the promoters being carried out to their proper extent. At this juncture, Mr. Francis Fuller, of Whitehall, who has already done so much to further the improvement of our educational institutions, and promote the recreation and employment of our working population, has come forward to rescue this national undertaking from difficulty, and appeals to the owners of property and residents in the vicinity to assist in carrying out in its integrity such a valuable institution and source of attraction in their midst. But Mr. Fuller's efforts do not end here. With a foresight of what other directors have done to provide a dividend at the sacrifice of the primary object, which is too often lost sight of, he is anxious that, at this hour of temptation and difficulty, a similar declension in the aim of the Palace and Park should not befal the undertaking, nor those who have its best interests at heart. We had occasion to notice, some months ago, the attractions which the managers of the Sydenham Palace had resorted to to increase the dividends of the shareholders—attractions that we thought deteriorated from the character and lessened the original functions of the palace as a school of art education. Mr. Fuller was one of the foremost who called attention to this misuse; and it is to be hoped his present appeal on behalf of the great northern rival will prevent a like perversion of the object of its original projectors. It is just the time to interfere to secure to the northern residents of the metropolis all the benefits likely to accrue from an establishment having for its end the recreation and intellectual improvement of the people. By the immediate co-operation of those who have a vested interest in this northern park and palace, I have no hesitation in saying all the advantages that might have been secured to the inhabitants of the south will be gained, and we can hardly estimate the true value of them. Possessing an unrivalled site of natural beauty, not the mere creation of a day, but adorned by some of the finest forest trees in the country, and having also the most enchanting views, the splendid building at Muswell-hill—at present empty and doing nothing—cannot, indeed ought not, be left to the chance schemes of speculating builders and mercenary directors.

Mr. Fuller's proposal is already before the public in a readable pamphlet, in which he ably prefaces the subject by a reference to a correspondence that took place between the Lords of the Treasury and himself upon the desirability of Government advancing at interest a sufficient sum to carry out the "salutary objects contemplated when the building of the Exhibition of 1862 was removed to its present site."

The policy of the Government, however, in reference to enterprises of the kind has been to stand aloof, and accordingly they declined Mr. Fuller's proposal whilst recognising the laudable object he had in view. Failing in Government help, our author proposes the Tontine principle; he asks people of all classes to secure the boon of the Palace and Park for themselves; and he shows them that all members of the Alexandra Park Tontine and Art Unions will receive specific privileges and immediate advantages "far exceeding in value the amounts respectively subscribed by them," besides the prospect of ulterior benefits of immense value. The details of the preliminary arrangements are succinctly stated. For the purchase of the estate of 400 acres, and the Palace and contents, £500,000 is required; or for the complete development of all other accessory objects, £650,000. The Tontine to consist of £1 shares, extending over a period of 10 years, at the expiration of which the estate, Palace and contents will become the property of those who shall then be members of the Tontine. The free admission and art union privileges explained in pamphlet, and offered to all, are ample value for the money paid for them; the subscribers for the first £500,000 and their nominees becoming in 1881 sole proprietors of a landed estate and palace calculated to be then worth one million and a half sterling. Such are the main features and advantages of the Tontine proposed, which ensures for the earliest members of the Tontine the greatest benefits. Among the privileges of the Tontineers may be enumerated the following:—One share can be surrendered for free admission to the Palace and Park for two years from the opening; such surrender excludes participation in the art unions, and in the ultimate division of the property; or if such share is not surrendered it will entitle the holder to a ticket in each of the three art unions, the prizes ranging in value from £500 to £2. Should a ticket not draw a prize the holder (if among the original subscribers) will be entitled to participate in the division of the estate in 1881. The drawing of a prize by one ticket will not invalidate the holder's right to benefit from subsequent art unions from other tickets he may have. Thus the holder of ten shares may perchance obtain a £500 prize in each of these distributions, and still retain his other seven shares in the division of the estate. Besides these privileges the registered holders of shares will be entitled to free admission during the continuance of the Tontine, those holding the greater number of shares having the advantage both in respect to admissions and art union tickets. Those holding 100 shares to be qualified for election as life governors, the future trustees also being elected from this class of shareholders. We may return to the other features of Mr. Fuller's scheme. G. H. G.

◆

ARCHITECTURAL ASSOCIATION.

THE first business meeting of this Association for Session 1870-71 was held at No. 9, Conduit-street, Regent-street, on Friday evening last, the President, Mr. T. H. Watson, in the chair. The minutes of the last meeting of the past session and of the *conversazione* having been read and confirmed, the following gentlemen were duly elected as members:—Messrs. W. Dudgeon, L. A. Whittall, T. Archer, G. H. Elphick, A. H. Paget, J. Stevens, R. L. Hesketh, R. Creed, T. E. Price, H. G. McLachlan, J. F. H. Buck, J. R. Allen, J. W. Brook, E. W. Fry, H. D. Appleton, G. Elkington, jun., A. J. S. Wrench, G. S. Taylor, A. Green, E. W. Mantell, F. Stock, A. J. Barlow, and T. Andrews. On the motion of Mr. J. S. Quilter, a vote of thanks was accorded to those who assisted the Association in providing the many interesting objects of art for its *conversazione* on Friday week.

Mr. J. S. QUILTER then moved the adoption of the annual report, which was taken as read.

The Report states that the number of members has greatly increased during the last session, and several additional opportunities for instruction in the study of architecture have been offered, which, together with the usual classes, have been well received and sustained by the members. The papers read at the ordinary meetings have been of an instructive character, and the interest shown by the members has been evidenced by the increased number in attendance, and by the discussions and remarks following the papers. The advantage of the Circulating Architectural Library are thoroughly appreciated. Several additional books have been presented and purchased during the past year, of which a catalogue is now issued, but many books are required to render the library complete, and donations of useful works will be much esteemed. The *Class of Construction and Practice* has been carried on with vigour, the meetings have been without exception well attended, the average being about 40. The replies to the questions given at each meeting show much research by the members. This class is especially valuable, as it brings before the student in turn the several branches of the profession which require practical knowledge and judgment, and affords great assistance in preparing for the Voluntary Architectural Examination. In the *Class of Design* there has been no falling off in either the attendance of the members or the quality of the designs submitted, while in the *Elementary Class of Design* the interest shown by the members has been a matter of satisfaction to the Committee of Visitors. A course of lectures on the History of Architecture was given by Mr. R. Phené Spiers during the session. These were well attended, and elicited special thanks from the members. A Class for Instruction in Surveying and Levelling was formed and also well attended. The course included six out-door and six in-door lessons. It is proposed to form a similar class during this session, if a sufficient number of members will attend. The responses to the prizes offered at the commencement of last session was not so large as could be desired. The visits to works in progress and ancient buildings on alternate Saturday afternoons have been kept up with regularity, and include the Library of the Temple; S. Thomas's Hospital; Fever and Small Pox Hospital at Stockwell; Islington Workhouse, and Model Dwellings at Pimlico and Fulham; S. Michael's Schools, Pimlico; West London Synagogue, Edgware-road; the Church of S. Mary Overy, Southwark; the Bishop's Palace, Fulham; and Kirkaldy's Testing Works, Southwark. An architectural excursion was made during August by about thirty members, and visits were paid to the Cathedrals of Lincoln and Peterborough, and about thirty of the principal churches in Lincolnshire. Mr. Edmund Sharpe, of Lancaster, undertook the conduct of the excursion. A similar excursion is proposed for the end of this session. The *Architectural Association "Sketch-book"* has been published monthly during the year. The class in connection with the Association for instruction in figure drawing has been discontinued during the session, as in its stead schools for instruction in drawing and modelling have been established at the Architectural Museum, governed by a committee composed of representatives of the Royal Institute, the Museum, and the Association. With regard to the *Voluntary Architectural Examination*, during the past year 3 gentlemen have passed the Preliminary and 4 the Proficiency examination, of whom 4 are members of the Association. Mr. T. Roger Smith has consented to represent the Association in the Architectural Section of the forthcoming International Exhibition of 1871. In conclusion, the report says:—It should ever be kept in view that although numbers may, to some extent, be taken as a proof of prosperity, the success of the Association can only be maintained by the individual efforts of the members. The Committee, therefore, trust that as so many opportunities are offered, each member will strive to distinguish himself in one branch, at least, and thereby prove that this Junior Architectural Society is doing what it can to raise the *status* of the Architectural profession.

---

* See the President's Address at the Institute, 1869.

In a few remarks supplementary to the report, Mr. Quilter, in reference to the prize offered by Messrs. Cox & Son for church plate, observed that the judge of the various designs will be appointed by the Association. The successful design will be carried out under the superintendence of its author, whose name will also be appended to the work during its exhibition. The Committee will take the usual means for furthering the success of the Voluntary Architectural Examination. The report having been adopted,

Mr. J. Douglass Mathews, treasurer, moved the adoption of the balance-sheet of the Association for the past session. The total receipts during the session were £441 11s. 9d., and the total expenditure £364 9s. 4d., leaving a balance in hand of £77 2s. 5d., which, with arrears of members' subscriptions, estimated at £70, and value of furniture, library, &c., £270, makes the total assets £417 2s. 5d., the liabilities at the present time being only £16. This report having been adopted, the various reports of the Class of Design, Class of Construction, Elementary Class of Design, Library, Architectural Art Classes, and Surveying Class were read and adopted.

The President's Address.

Mr. T. H. Watson, A.R.I.B.A., then proceeded to deliver his inaugural address. After some introductory remarks, he briefly touched on the principal works which have been completed or greatly advanced during the past year, such as the Thames Embankment, S. Thomas's Hospital, &c., and then alluded to the recognition by the Royal Academy of the necessity of offering something more in the way of education to its architectural students than it has hitherto given. As master for the Architectural School the Academy had selected a gentleman (Mr. R. Phené Spiers) eminently qualified for the post. In reference to the controversy between Messrs. Barry and Ayrton, he said he regretted that, under the pique of a possibly-successful resistance to an unequitable claim, it should be contemplated to fence round the free use of the power which has heretofore been reposed in the architect and exercised with advantage to his client. This power, which is ever used with more care as a trust imposed by others than even self-interest is found to create, can only be limited at the risk of danger in moments of emergency, and must have at all times a deadening influence upon the action of an honourable and upright man. But this and other similar indications tend to show that we are in a period of transition in respect to the general relations of the profession to its employers. Nothing can be more desired by all who wish to do their work conscientiously than that by free and fair discussion means may be found to define on some authoritative basis the duties which belong to an architect. If it is found necessary to require certain specific performances from those who profess a particular calling, it will doubtless be found equally necessary to provide some means of ensuring that those who profess that particular power should be in some way recognised as capable of fulfilling the duties which are the very basis of any contracts that they may make with the public. The desirability of a diploma is now virtually acceded. It only remains to discover the means of investing it with such an authoritative value as shall make it respected by the public; and such a test and means of application as will allow of its being received by the whole body of the profession. And here is the great and immediate difficulty to which all our efforts should be directed. Nothing can be lost by liberality on the part of the elder men, which may stop short at requiring the actual test value of the examination to be maintained and, indeed, improved. Certain it is this must not be lowered. Those who in the first few years of this movement entered upon the Voluntary Architectural Examination were heavily weighted by the uncertainty inseparable from everything which is new, and the want of practical experience in the mode of working the system they were called upon to submit themselves to. These difficulties have now in great measure been removed, and it is for those who now have to carry on the work to bring to bear greater efficiency and exactness in their attainments, and to raise the standard to its highest excellence.

Coming to the question of the education of young architects, Mr. Watson referred to the difficulties of the old system—difficulties which, conquered, added strength to him who overcame them, and served early to discriminate those who were fit from those who were unfit for the work. But with all his increasing facilities, much more is required of the young architect now, and it is not to be feared that any of these increased facilities will deprive the architectural student of the strengthening and improving lesson of overcoming difficulties. It is especially an advantage to the student of the present day that the old system is not so far distant as to have its traditional teaching forgotten; nor is the new so far established as to permit of any of the blighting influence which long establishment seems always to gather round it. We may now be said to be in the progressive period of our artistic life, which is the happy and hopeful one. The danger of the new state of things is that when a fully-established system is at work, the individuality which has been the great characteristic of all our English art is likely to be overspread by the meshes of system, and, while all will be early brought to a certain degree of excellence—which is a desirable thing from a utilitarian point of view—the few, with higher qualities for their work, will be longer in coming to the surface, and many will be over-borne by the fatiguing length of a contest in which the rougher natures will best bear the brunt of the fight. Mr. Watson then proceeded to review the position in which the architect student is now placed. An architect, he said, should be both artist and constructor—artist first, then constructor. A great writer on architecture has observed "Man is born constructor," but all will agree he cannot be made an artist. The artistic and constructive are two very widely different sets of faculties, and many are born with something of the one and very little of the other. With this primary defect we are submitted to a series of those accidents throughout our early lives, the result of which is that no two men are alike, and which culminates in that grand accident—our entrance into some one or other of the many offices which all offer such unusual advantages to "young gentlemen" to make themselves acquainted with the duties of the profession. This accident, properly striven against, though it may retard for a time, will certainly be followed by some advantages that will have their usefulness in life. It is not where there are the largest works, nor in those offices where little now remains to do, that the student can obtain that particular kind of instruction which is so advantageous to him in the early years of his professional life, though, of course, the value of a period spent in acquaintance with the best works of the best architects of the day is such as cannot be too highly esteemed. Mr. Watson went on to point out that the principal accidents of early education and pupilage were to be averted by a diligent following up of the various advantages conferred by the Association on its members. Perhaps, however, artistic power was sought after in the Association too much to the exclusion of scientific knowledge. He was inclined to recommend that more attention should be given by the student to those parts of his education which are least exercised and need the most care, such as careful planning, and a thorough searching out of the reason and fitness of everything he may do. Good planning is often found connected with some atrocious detail, and should be considered by the student without any reference to the detail; and it is in the care with which the most trivial matters of usefulness and fitness are treated that the work of an accomplished architect is particularly distinguishable. To those who had been introduced to the profession under the most disadvantageous circumstances possible, Mr. Watson said: Defer as long as possible attempting to design; learn all you can; draw all you can; and understand all you learn and draw. Old work should be diligently studied, but not in books alone—that is waste of time so long as any work is accessible which the student has not carefully measured and faithfully drawn. Design in architecture is a distinct mental creation of an object, simple or complex, which shall satisfy particular wants of man, and be capable of fulfilling every condition under which those wants may be felt, and the idea involves not only a fitness of external appearance, and a fitness of arrangement of the internal parts, but a proportion and harmony among all these, and a definite use and purpose for each line and detail which may constitute a portion of it, and that cannot be considered good design that does not present itself in such a way as to show that no portion or detail can be added or omitted without injuring the object as a work of art or without detriment to it as a useful thing, and the faculty to make this, which is the highest effort of the architect's mind, does not come to him but after very careful and laborious work. Probably the most certain and most instructive way in which the faculty may be acquired is by working the object on which the student may be engaged backwards and forwards, so to speak, from plan into elevation and section, and from these back again into plan, until some approach to the desired fitness is obtained, and this should be done as much as possible without the use of any detail, which diverts the mind and weakens the power of judgment. A most curious feeling is that which is afterwards experienced when the mind first feels the power of direct inception of the design of an object at once in its quality as a cube. This may be done without the use of paper and pencil, and yet each part be as distinctly created for the others and put its mark upon all the rest, as we see in the work of nature, and as we know the hand to be created for the service of the body. Design is, of course, the ultimate object of the architect, but the way to it should be gradually led up, and very much should be done before any attempt whatever is made to create original design. Mr. Watson then proceeded at some length to indicate the order in which, in his opinion, the various classes, &c., in connection with the Association should be embraced by the younger members of the profession. First, he placed the Library, next the "Visits to Works in Progress;" then the Class of Construction; then the two Classes of Design, of which he said that even the junior or elementary class should not be joined too soon. Until the mind is stored with some carefully-digested material, it is impossible to make any advance whatever in design. From the Elementary Class the student would of course pass to the Senior Class. Next in order Mr. Watson placed the competition for prizes offered by the Association. The Architectural Art Classes recently established should be attended independently of and supplemental to the advantages conferred by the Association, while the Academy should be entered by every student who would advance in his profession. As to the Voluntary Examination, Mr. Watson believed it to be the duty, as it would certainly be found in a few years to have been the interest, of all who wished well to the profession to throw themselves heartily into it. This should be the end of the first stage of their professional life, and may be deferred to the last moment of their actual studentship. The advantages of travel were briefly dwelt upon by the President, who, in conclusion, gave some sound practical advice to those who were starting in business for themselves.

On the motion of Mr. Lacy W. Ridge, seconded by Mr. Phené Spiers, a vote of thanks was given to the chairman for his address, and the meeting terminated.

◆

Extensive additions are in progress at the Asylum for Idiots, Earlswood, and a new infirmary, at a cost of £4,000, is proposed.

ON THE HISTORICAL DEVELOPMENT OF ORNAMENTAL ART.

DR. G. G. ZERFFI delivered his fifth lecture on this subject in the Lecture Theatre of the South Kensington Museum on Tuesday afternoon last. Referring to the principles enunciated in the previous lectures, he said that Nature had been shown to be the basis of art. Art was the idealisation of nature, and had, without doubt, a purpose. This purpose being admitted, every work of art must be looked upon from two points of view—firstly, as a production for a certain purpose, whether real, imaginary, or symbolic; and secondly, as the product of a certain substance or material. The purpose of art was in all times the same, as far as it was based upon the general wants of man. The cave, the hut, the wigwam, the house, and the palace, had all the purpose of protecting him from the influences of climate. The material, however, and its use, both varied according to the degree of intellectual development in the artist. This being the case, it was necessary to glance at the nature of the materials or substances employed in the production of works of art, connecting this consideration with the historical investigation of the development of art. In illustration the lecturer drew attention to the band, a broad but not very deep moulding, either encircling an object or stretching down it to bring certain forms into greater prominence. The band might be of marble or of Portland cement; it might consist of a simple line, or it might be in the form of a cord or cable. The general idea expressed by a band was fastening together, but the artist would have to bear in mind that this must be differently treated according to the materials of which the band is composed; it must be dealt with in one way when in wood, stone, clay, or metal, and in another when in linen, wool, or silk. If it consisted of flowers the nature of such flowers and the forms of the leaves would have to be taken into consideration by the artist; and again he would have to treat his subject differently should it be composed of pearls, the heads of birds, or other objects. The study of his materials was thus shown to be of the greatest importance to the art student. Raw material might be divided into four principal classes—firstly, such materials as were pliable, tough, and of great resistance—as fibres; secondly, such as were soft, plastic, and capable of being hardened, retaining in that state the forms received when soft—as clay; thirdly, such as were elastic, had a vertical resisting force, and could be employed as staves—as wood and metal; fourthly, such as were firm, solid, resisting pressure, and, when divided into small parts, could be combined into any forms, and connected systematically for any purpose. Referring to this classification it would be seen that the savage had been acquainted with fibres; the mythical man with fibres and clay; the traditionary man with fibres, clay, wood, and bronze; and lastly, the historical man had availed himself of all these, with the addition of stone and iron. This would serve as an historical division. Considering art from a technical point of view, it was possible to divide it into four classes:—firstly, textile art; secondly, ceramic art; thirdly, carpentry or tektonic art; fourthly, architecture or stereotomy. In thus classifying art, the divisions should be taken in their widest meaning. The lecturer next referred to the various forms and patterns which might be used. Each of these classes of art had certain particular forms, though a pattern which contained the very essence of one class would often be utilized by another. By this means the lines of demarcation became less apparent. They should, however, be always borne in mind by the real artist. Forms of textile art were continually employed in architecture—as in frets and astragals. Ceramic art included vessels of every shape and pattern, whether made of glass, clay, porcelain, bronze, iron, or even wood, and might even embrace textile art—as in baskets, &c. Ceramic art, again, served architecture with tiles, bricks, terra-cotta ornaments, &c. Tektonic art embraced not only such wood-work as roofs, rafters, &c., but included the construction of household furniture, and thus often required the aid of the the architect and metal-founder. Architecture required the aid not only of the master-mason, the bricklayer, and the stone-cutter, but that of the artist in mosaics and the wood or ivory carver. In fusing the four principal classes of art, we arrived at our mixed styles. This might be particularly observed in the case of the jeweller, for instance, who combined in one piece of workmanship the principles of weaving, pottery, joinery, and architecture. The principle of the division of labour had been carried too far. This was particularly the case with art. The meaning of education had been quite misunderstood when associated with the word "technical." "Technical education" was altogether a misnomer. We might have technical *instruction*, but *education* was something widely different. This had been understood by the classical nations, with whom architecture, sculpture, ornamentation, and painting were not specialities. Everything necessary to the construction and ornamentation of a building was looked upon by them as of equal importance. When a master mind, capable of uniting these specialities in one harmonious composition was wanting there resulted a species of patchwork which, though excellent in its details, could from a general point of view, only be considered a gross failure. As the lecturer had before observed, the artist had two duties—one to have a clear notion of the purpose of his work, and the other, to know how to choose and how to treat his material. One of the most useful materials, which combined all the qualities of the four classes of raw materials, was metal, more especially iron. It was flexible, tough, plastic, elastic, and firm, and could be used for almost any artistic purpose. After referring to facility with which cast-iron, by reason of its cheapness, might be employed in disseminating a love of art by means of well-designed statuettes, candelabra, busts, &c., the lecturer proceeded to treat of Mexican art. He said that owing to the absence of any reliable dates, Mexican art must be included under the head of pre-historic art. Textile art was known to the Mexicans, as, in fact, it was to all the pre-historic nations. Ceramic art in an advanced degree was also known to the early Mexicans. In these two branches of art could undoubtedly be traced the first endeavours of the Mexicans at ornamentation. No country gave us a clearer insight into the primitive development of the different branches of art than Mexico. Jade and some varieties of basalt were largely used by the Mexicans. Jade was now so rare that no traces of it had been discovered either in North or South America. This, coupled with the many points of resemblance between the Mexican productions and those of Egypt and India, led to the inference that some connection must formerly have existed between the Old World and the New. Dr. Zerffi, in amplification of this view, and in further illustration of Mexican art, proceeded to describe in detail a magnificent collection of photographs (principally from objects in the Christy collection), kindly lent for the use of the lecturer by Mr. Charles Harrison, jun.

DAMP DWELLINGS.*

THERE can be little doubt that damp is the most formidable enemy to health which our English climate harbours. We are not far enough north for piercing cold to be habitually or seriously dangerous. We are not far enough south to be subject to the fevers, malaria, and sunstroke of hotter climates. But the list of ills arising from the moisture of our climate is a long one; it embraces the most destructive forms of phthisis and rheumatism, and includes some ailments, such as coughs and colds, from which not one in a thousand is exempt.

Our dress and our dwellings, our food and our habits of life, ought to be specially designed to protect us against inclement weather and its consequences; and no doubt to some extent they are so, but not in anything like an adequate degree; and it is notorious that our houses especially stand in need of improvement in this respect. This might easily take place if public attention were sufficiently directed to the necessity for it, and a dry house became an object of constant demand; but so long as the persons who take houses will rest quite content with their being roomy, well arranged, and pleasant looking, without much thought as to whether they are likely to prove dry and healthy,—so long will the majority of builders continue to neglect precautions which cannot be observed without some expense, and attention to which does not, they find, add to the money value of the houses that they erect. The first step to improvement in the average English dwelling-house is to create, if possible, a state of public opinion such as would render a badly-constructed house an unmarketable article.

Damp, when it enters a house, comes in at the roof, at the doors and windows, through the walls, from the ground, or through leakage of pipes. The entrance of damp through the roof itself is fortunately so unpleasantly conspicuous, owing to its staining the ceilings, that it is not long in being found out, and before repairs more or less complete are made. But for this, roofs would be more commonly untrustworthy than they are, and injury to health and life would oftener occur through their failure. Many roofs are, however, so constructed that, in times of great rain and of snow, an inundation is almost inevitable; and the situation of such houses as are near trees exposes them every autumn to the danger of overflows from gutters stopped up with dead leaves. Roofs, to remain dry, should be of sufficiently steep pitch for the nature of their covering; flat tiles requiring a steeper roof than "pan tiles," and these latter a steeper roof than slates. Whatever the covering, the materials should be good and well secured. Roofs should be so arranged as to dispense, as far as possible, with gutters and flats occurring in the middle of the building, but should, if practicable, throw off the whole of their water to the sides. The points where they join walls, parapets, and chimneys, are especially vulnerable, and should be especially protected, either by a lead "flashing," or by a cement fillet with a small projection formed to overhang it in the brickwork. It is essential that tiles should overlap one another sufficiently, and that, if the covering is of metal (as lead, zinc, or copper), it should be so laid as to be free to expand or contract with change of temperature; and in exposed situations it is essential for tiles, and desirable for slates, to be bedded in mortar. This, however, must be so done as not to prevent there being a clear drip from one tile or slate on to another; otherwise the mortar will become saturated, and will conduct the water to the inside of the roof.

Where a roof is found to be defective, the fault is commonly due to broken or ill-secured slates or tiles, to defective covering to the joints next the walls, or to badly arranged gutters. In some cases it may be necessary to re-arrange the construction of the roofing, with a view to throw off the water more completely; but in the majority of instances the remedy is to replace bad materials and workmanship with better ones. Where it is admissible, a simply arranged and well constructed thatched roof is dry as well as warm.

For the same reason which makes the defects in a roof comparatively harmless, from our present point of view, defects in doors and windows, though certainly injurious, are not the worst of faults; for leaky windows, like an unsound roof, occasion discomfort when it rains, and they are therefore likely to be found out and remedied. Our sash window, the ordinary kind in use in England, is well contrived for keeping out rain; when well made of seasoned materials, a sash window is, without doubt, a perfectly weather-tight contrivance; and even when badly made it is superior to a bad casement. Where casements are employed, the most weather-tight construction is that which is universal in France although rarely seen in England. In this arrangement the window is divided into two folding casements, or glass doors, meeting in the centre, and both opened or closed at the same time; the joint being made tight by the edge of one casement being rounded, and the corresponding edge of the companion one hollowed. There is, however, a preference in England, when casements are used, for their closing against a frame; and here a clever arrangement of hollows and projections will effect a good deal in the way of hindering the passage of moisture. A projecting fillet of wood, so arranged as to throw off the water which in wet weather drains down the face of doors and windows, is an excellent precaution against the entrance of moisture; and, where a somewhat expensive expedient can be adopted, the mechanical contrivance called a "water bar" is often successful in keeping out the weather at external doors and casement windows. For the ordinary leaky joints which constantly have to be encountered in some rough and ready way, there is no packing better than a piece of india-rubber tubing, nailed up against the edge of the defective joint. The enemy, however, attacks us openly when it comes in at the window or the roof; and the shape in which it shows itself—that of a stain or a pool of water—is a palpable guide to the locality where the defect is, and often furnishes a clue to the mode of applying a remedy.

Where moisture penetrates the walls, the case is widely different. The harm done is insidious;

---

* T. ROGER SMITH in the *Food Journal*.

it may go on long without being detected; and when perceived it may be difficult to find out how the mischief arises, and almost an impossibility for even an experienced person to devise a remedy. It must be recollected that nearly all the materials used in building are porous, and consequently absorbent of moisture; many of them are pervious to wet to an extent little suspected, and in not a few instances they are even hygrometric. A driving wind and rain, in an exposed situation, will blow through many kinds of stone walls, and certainly through any sort of brick wall, if of moderate thickness and solid build; and a wall built with sea sand contains in its very mortar joints a material which has a constant tendency to absorb moisture. Further, many a wall which can withstand the ordinary attacks of rain falling against it, will give way before a stream of water poured down upon it at a given point; and it constantly happens that the arrangement of our houses is such as to give opportunities for this to occur somewhere or other. Lastly, bad workmanship, or unskilled use of materials, will make defective walls out of even good bricks and sound stone.

It is then of the first importance, if a house is to be dry, to know how far the materials with which we propose to build will turn water, and if we find we cannot rely upon them to do this, to understand how to remedy their defects; for the same bricks or stones which, built up in one way, will form but a damp wall, may often be made, by other modes of handling, to resist weather thoroughly.

◆

NEW ELEMENTS OF HAND-RAILING.*

(*Continued from page* 330.)

Plate 8.—Platform Stairs continued from Second to Third Floor.

Figure 1 exhibits ground plan of platform; the cylinder 16in. Let one baluster stand on line O, O. Have the space from centre to centre to equal half the width of a step. The plan is now ready, for the rail to be on either right or left hand, going up the stairs say the left. Then draw riser V and P. Next, set off width of step on right and left. Draw face of riser landing; also that starting. This arrangement gives three balusters on platform and two on steps, which is quite proper for a large cylinder.

Fig. 2 shows cuts of carriages and pitches of wreath. These are obtained in the following manner:—

Let margin on the right be the edge of a board. Start by drawing a line to any angle, say that through L A. Let L B equal O O on the plan. Set off from B three spaces to equal L B. This gives K as the spring. Let K R agree with corresponding letters on plan. Set off square step, starting from platform and that landing. Next, draw carriage starting. Let the front of platform have sufficient depth to give proper bearing for carriage starting. Assume present position. Measure distance from K to face of trimmer. Let K 2 on plan equal it. Next, carry up dotted line from 2, and we have the cut of carriage landing. Proceed to find pitches of wreath by drawing a line to rest on corner of each step cutting B and T. Join B T. Then draw from joint C parallel with platform cutting at L, which gives A L as half the height. This being equal with C J above shows that one mould answers for both lower and upper piece of wreath. Next, obtain a direction for ordinate by extending A B cutting at N, which gives N L. Transfer this to extended side of square, Fig. 3. It having similar letters, I need not give the method of drawing the mould nor repeat its application to stuff.

The method given and explained on the preceding plate applies not only here, but to every wreath, no matter what its plan may be.

The tangents A, B, C on the mould must in all cases equal corresponding letters on the pitches. The letters on the moulds and those on pitches being similar, enables the learner to test at a glance the correctness of his work.

But, in case they should not agree, then there is an error in the construction of the mould. See to this before proceeding any further.

Fig. 4 shows the position of risers starting from second floor. Draw centre line of rail. Then extend the diameter S O. Next form the quarter circle. Let the centre of a baluster stand on line O O as shown. Set off three or four balusters on the right. Let each space equal half a step. Have the riser beyond S stand so as to suit the dovetail on top of second step. This done, set off the width of first step. Curve the front of riser. Observe that the position of this step and riser has been regulated and fixed by having a baluster stand on the line O O. The object is to give a proper easing to the wreath starting from the level floor, which could not be done by having the step in the same position as that starting from platform.

Fig. 5 shows the elevation of floor and ramp landing. Let the step and riser starting stand in the same position as that on the right of Fig. 4. Then set off from line marked height four spaces toward A, each space equal to O O on plan. This done, square up lines A, B, C, D. Let under side of level ramp stand above the floor to suit long baluster shown on square step. Next set off half thickness of rail and draw A B. Let under side of rake-rail rest on corners of square step starting. Set off half its thickness and draw E D. Then join D B. This completes the pitches of the wreath. To find its height, draw a line through joint C, cutting at 2 and N. This gives N E for the upper part, and 2 B for the lower.

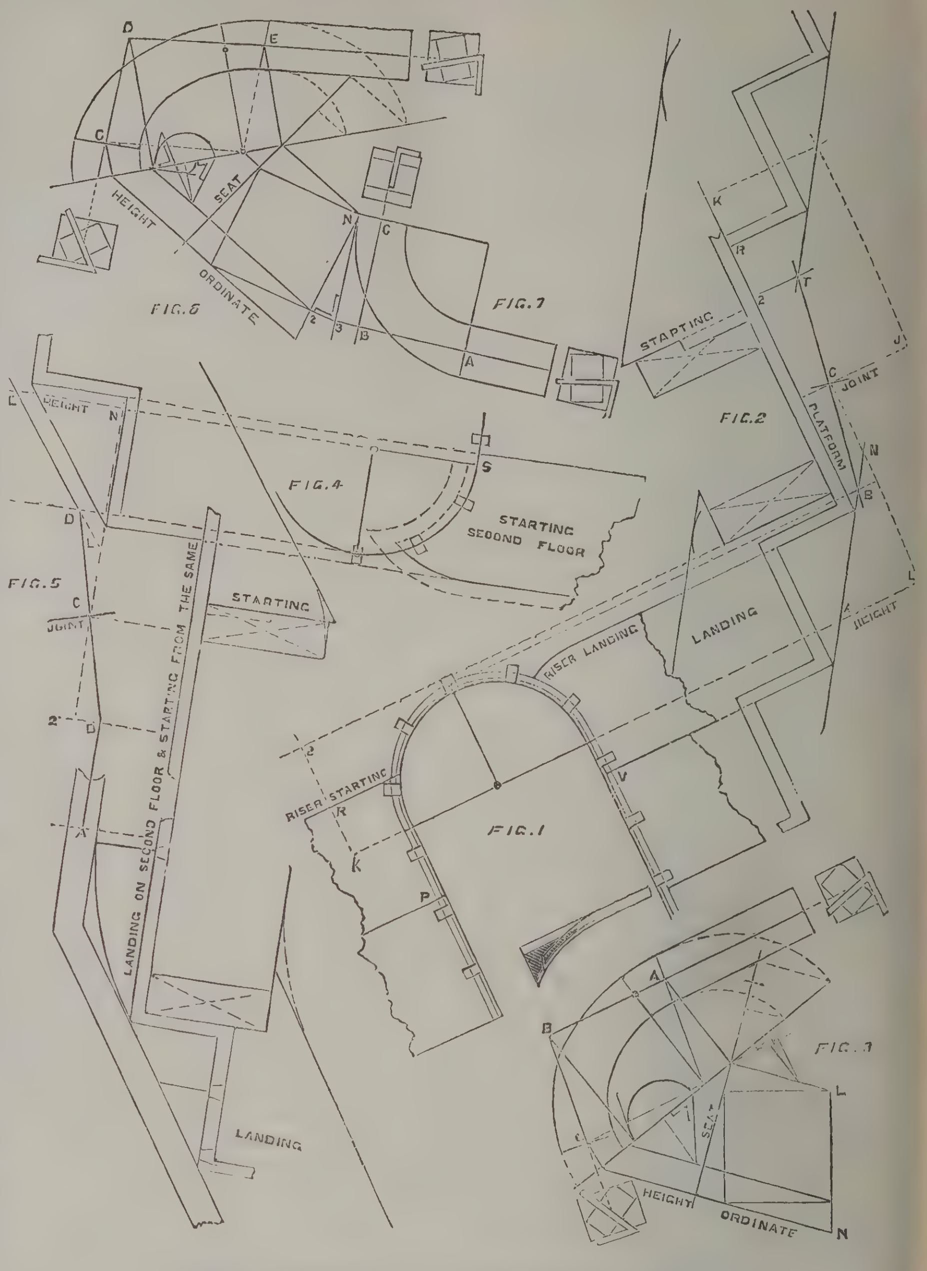
To find a direction for ordinate, extend E D, cutting at L. This gives L N, which transfer to the extended side of square, Fig. 6. Then draw the ordinate, and complete the mould as usual. See that the tangents C, D, E equal corresponding letters at Fig. 5.

Fig. 7 shows the mould for lower part of wreath. To find the bevel for shank, extend one side of square to the right. Let 2, 3 equal 2 B, Fig. 5. Join 3 N. Thus giving required bevel. Next, square over from N and 3. Let B A equal 2 N. Add straight wood for shank. Make N C equal half width of rail.

This mould may be struck with compasses, as the lines A B and B C are nearly equal. The square section shows application of bevel to joint on shank. The joint C, its square section, shows that a square is applied, and slabs are cut off upper and lower side of plank. This completes the mould.

Return for a moment to Fig. 5, and notice carriage starting. You perceive that the joist stands back from cylinder. This is correct, as the foot of carriage must have a proper bearing, which would not be the case were the joist moved forward.

Let the space be furred, and ends of flooring-boards supported by bridging between carriages.



NEW ELEMENTS OF HAND-RAILING.—PLATE VIII.

◆

EARLY GOTHIC STONE CARVINGS.

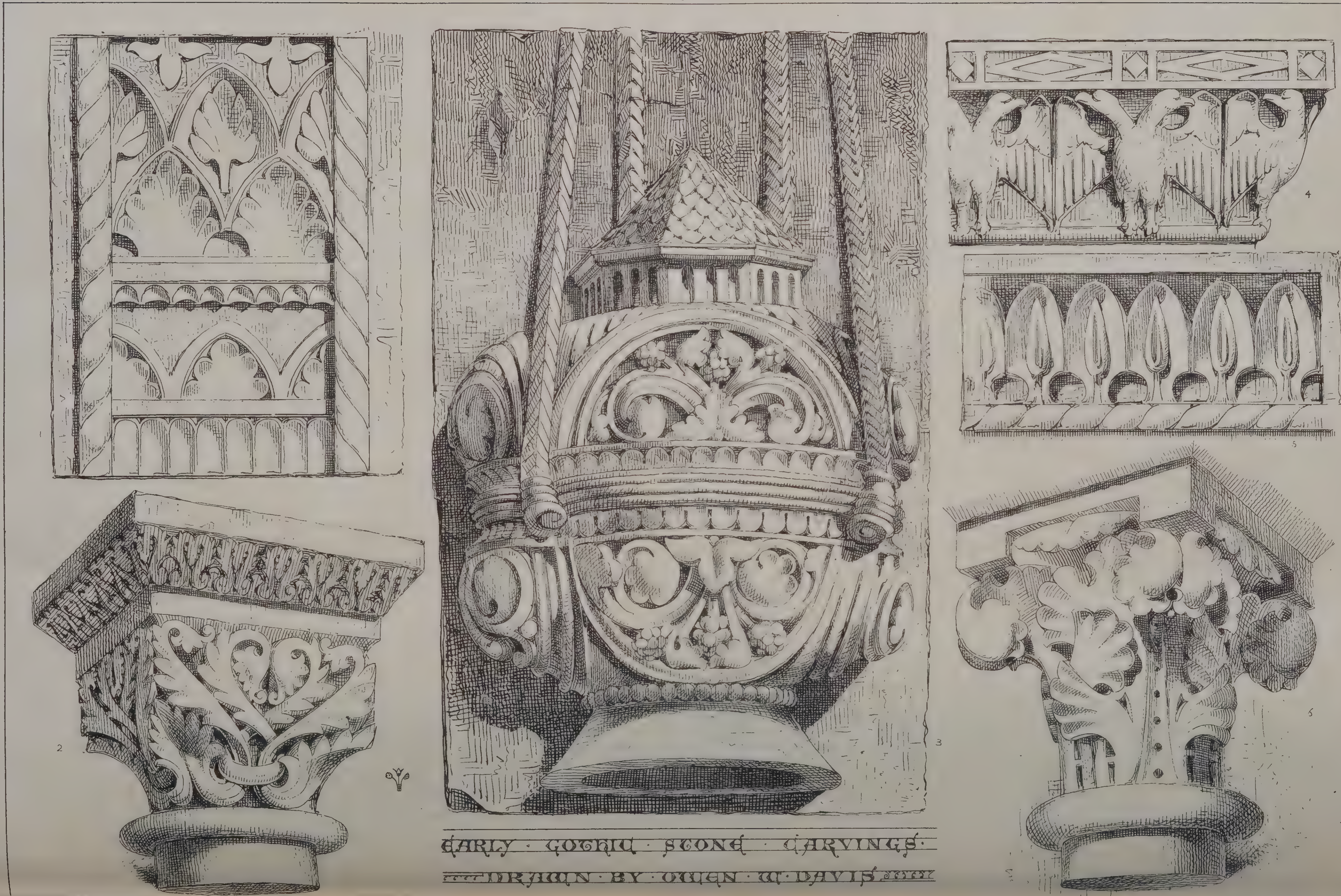
THE Romanesque details which make one of the lithographic illustrations of the Building News for this week, are taken principally from the Architectural Museum Collection.

Nos. 1 and 5 are from the side of a font. Nos. 2 and 6 are capitals; the former, drawn from a cast in the South Kensington Museum, is almost Byzantine in feeling. No. 3 is an example of a beautifully sculptured thurible. No. 4 is a very quaintly conceived abacus.

O. W. D.

---

* This series of articles is a reproduction of Robert Riddell's work on the subject, published in Philadelphia, and by Trübner and Co., London.

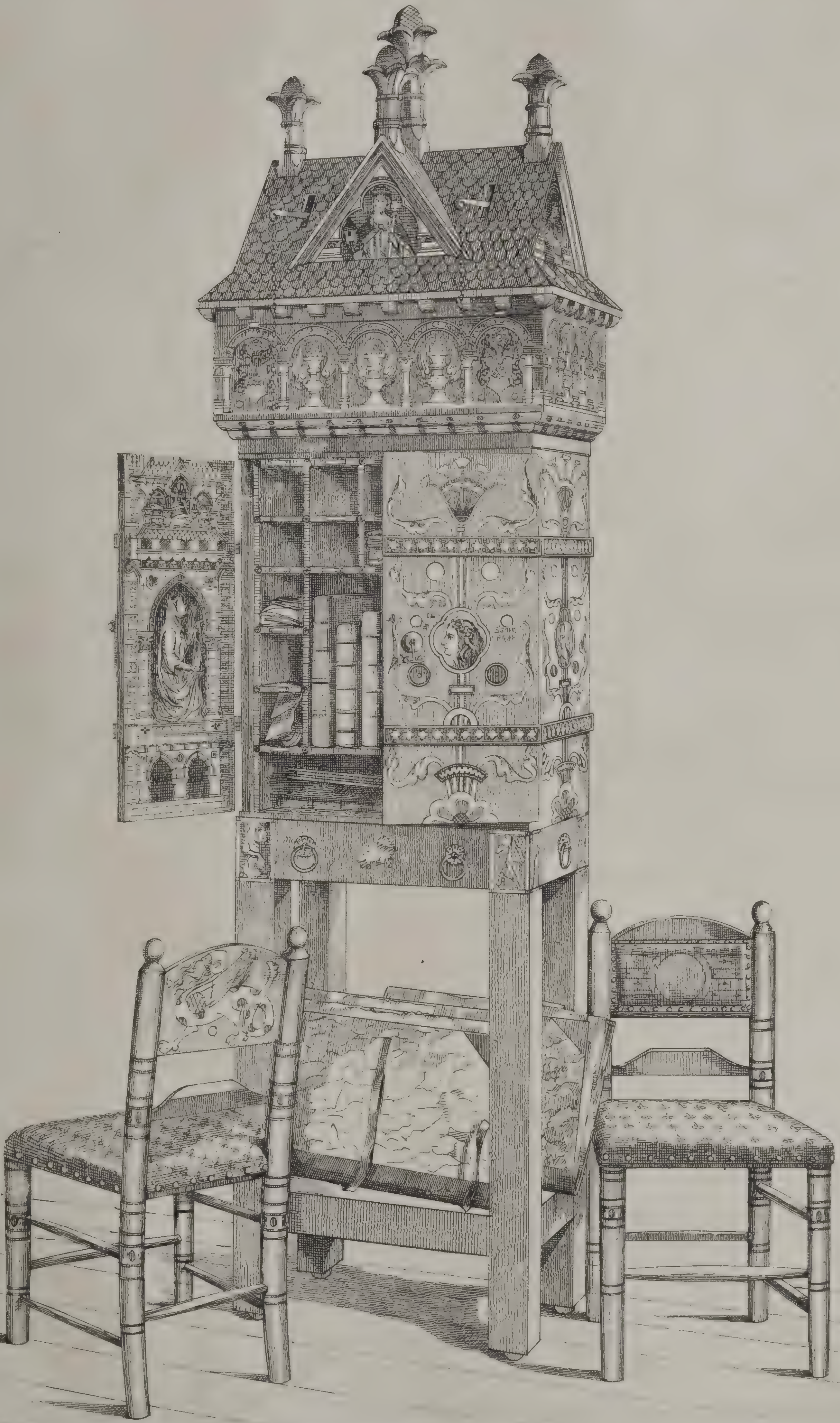


EARLY · GOTHIC · STONE · CARVINGS ·

DRAWN · BY · OWEN · W · DAVIS

Owen W. Davis del et lith

The Building News Novr. 11th 1870.



E. Pocock Lith

Printed by Whiteman & Bass.

Cabinet.

Designed by Wm. Burges, Archt.

Furniture & Decoration.

HOUSE PAINTING AND DECORATION.

By "An Experienced Workman."

(*Continued from page* 317.)

DECORATIVE PROCESSES.

IN designing or adapting ornament for stencilling, a knowledge of drawing is essential. This is so self-evident a fact that we need not dwell upon it here. There are, however, certain methods and simple means which may be used and which are constantly used in the getting out designs for stencil ornaments, and which methods tend to facilitate the doing of the work so much that we are bound to describe them here. The principal of these are tracing, pouncing, and transferring. In using the word tracing, we do not mean it in the ordinary sense (*i.e.* to copy an ornament by placing a transparent tracing paper upon it and marking the lines as they appear through it), but in its practical and really useful sense. In sketching or designing an ornament which has two equal sides, that is to say, two parts which shall be each a counterpart of the other, a perpendicular line is first drawn on the common white or coloured lining paper, the paper being of the full size of the space the ornament is intended to occupy. On one half of this, with a piece of stick charcoal, one half of the proposed design is sketched; the paper is then folded or doubled exactly at the perpendicular or division line, with the charcoal sketch downwards, and the paper is then rubbed with the flat of the hand or with a folded cloth or rubber. When the paper is unfolded, it will be found that the charcoal has transferred an impression to the other or blank half of the paper, being, of course, a facsimile of the charcoal sketch. We are thus enabled to see the effect of the complete ornament, and if it is not suitable in any part a portion of the charcoal may be dusted off and the ornament resketched. If the design is now satisfactory it should be folded again to its original form, but the opposite way, with the design outside. The half which has upon it the transfer should be dusted off clean and placed upon black or other transfer paper. The original half of the design should then be carefully gone over with a lead pencil, and corrected in outline, using a light pressure with the point of the pencil. Wherever the pencil has touched it will cause a corresponding mark to be transferred from the coloured paper underneath on to the blank half of the paper, and thus we get the ornament traced complete in its corrected form, in coloured lines on one half and in lead lines on the other. Another method of tracing, so as to get the lines all one colour, faint or strong as may be required, is to sketch one half of the ornament as before described; the paper is then opened and is made into transfer or tracing paper by being rubbed over with a rag or a ball of cotton wool and indian red, or other colour, which will cause the lines to be faint or strong according to the amount of colour left on. We now take a clean sheet of paper of the same size and fold it in half, and put it inside the coloured paper which has the sketch upon it, which is then traced and corrected as before. If this is properly done the whole of the ornament will be transferred on to clean paper; it will be evident that by this means we produce an equal-sided design without measurement, and at a considerably less cost of labour than by any other method. For all flat or stencil ornaments this method very materially facilitates the execution of the work, especially in all designs to which freehand drawing is applicable. Diapers and all set or geometrical patterns require the aid of rule and compasses, as a matter of course. Designs for stencilling may be placed upon the stencil paper at once by the foregoing methods, thus effecting a great saving of labour and expense. In putting any set or geometrical pattern upon the stencil paper, such as diapers or borders which repeat themselves often in a given space, we find it facilitates the work if we cut a section which will comprise the pattern to be repeated; with this we stencil the pattern over the space to be cut, having previously set out the whole in squares, circles, or triangles, as the case may be; but in cutting stencil patterns, which themselves have been stencilled, care must be taken to cut them full, that is, outside the edge of the pattern, as all stencil patterns in which the pattern is cut out print in some degree smaller than the part cut out, which in recutting must be allowed for. On the other hand, if the ground is cut away, and the pattern left, the ornament will print larger than it really is, and so will require to be cut close to the line of the stencilled pattern. In selecting or designing ornament for stencil, &c., simplicity of arrangement is very conducive to a successful result. This will be evident, if we consider that the parts of stencil ornaments or patterns must of necessity be separated, simply because the pattern cannot be wholly cut away, or its various parts would be disconnected, and therefore ties or portions of the paper have to be left to hold the patterns together. In many cases these ties have to be filled up with the pencil and colour after the pattern is stencilled, which causes much extra labour; not only so, but there is scarcely any possibility of doing this without the piecing showing, for singular to say, although the colour with which the work is stencilled and that with which the ties are filled up are the same, the two surfaces are so different that the light acts unequally upon them, and they never can be made to look alike,—the rough granular surface left by the dabbing of the end of the stencil brush may be compared to a stuccoed wall, and that left by the pencil to smoothly finished plaster work. From this it will at once be perceived that it is always best to arrange the design or ornament so as to leave as few ties as possible, and those which cannot be avoided should be so placed that they will not be seen as ties, or show as a want or defect in the finished work. With a little care and consideration this may be done. Ties should be placed at parts which cross each other; so placed they serve to conduct one part under and the other over, and so look natural. The junction of stems or stalks with leaves, whether conventional or natural types, are proper places for ties. At the junction where one ornament or part of an ornament springs out of another, ties may be placed without their being perceived as ties, and the ornament may be so designed that the ties will appear as part and parcel of the ornament itself. Nothing looks so bad, so unskilful, and so unworkmanlike as ties when they are badly placed: they give a common or unfinished appearance to the work, and distinctly show how it has been done,—a fact, by the way, which ought to be concealed as much as possible, for it lessens the pleasure derived from it. This consideration leads us to note here that in all cases where practicable, we prefer to stencil in the background of the design, as we thus make it appear as a part of the wall, the general colour of the wall forming the pattern. We may also by this means paint in bands of a lighter or darker shade, or a piece round a room, and stencil backgrounds upon them, which in effect and finish are infinitely superior to the same pattern cut out and stencilled in colour. The two may be combined and worked together with advantage; as, for instance, in stencilling a border on a dado of a staircase, a band of colour may be painted between the light colour of the upper part of the wall and the darker part below; on this band a pattern may be stencilled, in which the background of the ornament is cut away and the ornament is formed by the colour of the band. Underneath this, a dot or anything else may be stencilled upon the darker colour, the pattern being cut out, and above the band, upon the light colour of the upper part of the wall, a cresting or ornament, also cut out, may be stencilled. The whole of the three may form portions of the same stencil, and may of course be worked all together, and the operator may put in four or five colours with the same stencil and with admirable effect. It is a law of colour, that when two or more colours impinge upon one another they are best developed by being separated by lines of white. We fulfil this condition in a great measure by stencilling in coloured backgrounds, as we must by the very nature of the process divide the various colours by lines or patterns of lighter tints than the backgrounds we stencil in.

In cutting stencil patterns, much care and practice is required in order to produce a clean-cut, sharp, and correct working-pattern; for except it fulfil all these conditions no good work can result. Various substances are used for cutting upon,—hard wood, sheet tin, zinc, &c., &c.,—but we have found in practice that wood gets so much cut up and scored, that it interferes with the free run of the knife; tin and zinc are objectionable from a similar cause, and we, therefore, prefer a sheet of glass for that purpose—polished plate is best—and with a good hard and well-tempered knife, there is no material on which we can cut so well and so easily. In cutting curves, it is a good plan, while holding the paper close to the glass with the left hand, to gently move the paper in the opposite direction to that in which the knife is cutting, that is, pushing the paper against the blade, as by this means we are better able to cut the curve correctly than if the paper is kept stationary; in fact, with practice curves may be cut correctly by simply keeping the point of the knife stationary and moving the paper against it. Circles of all sizes up to 1½in. may be best cut with steel punches, which may be purchased at any toolmaker's or general ironmonger's. Half-circle punches are also very useful for cutting half rounds, curves of leaves, and many parts of both conventional and geometrical ornament. When cutting with these punches the stencil should be placed upon a slab or square of hard wood—box is the best; a thick piece of lead will also answer the purpose, but we prefer the wood, as it can be so easily planed and made level after being used. In cutting straight lines, a steel straight-edge is best; when wood straight-edges are used the knife is apt to cut into the wood and the edge is spoiled, therefore in every respect the steel is the best and most serviceable. The best form of knife-blade for cutting stencils is either the curved blade, curved from the back edge to the point, or else that form of blade in which the front edge of the blade is ground away, until it forms a fine point with the back edge. The narrower or finer the point of the knife, the better it is for the work, inasmuch as when the point or end of the blade is broad or blunt, the lines of the pattern will not be so easily seen, and its breadth interferes with its use in short curves, and there is always much danger of cutting further than we intend, and thus cutting the ties, making them weak and liable to break, causing much trouble and loss of time in repairs. Whereas with the truer forms of knife-blades described above this danger is reduced to a minimum, and from their form they are easier kept sharp and fine pointed, and there is no difficulty in seeing what we are doing.

We may here give a caution as to the manner of using and taking care of stencils: these are often broken and spoiled from want of care in using, and neglect when done with for a time. When in use the stencil should always be kept as close as possible to the wall, if it is not so kept the dabbing or rubbing with the stencil brush is sure to break it; this is especially dangerous on wall surfaces which are not very level. In turning corners or angles when the stencil pattern has to be doubled, it is better to cut a special stencil for that purpose, in order to avoid breaking or injuring the one used for the flat surfaces. When stencils are done with for a time, they should be washed or cleaned with water or turpentine, as the case may be, and not left to dry with the colour on them, for nothing destroys stencils sooner. If they are left in distemper-colour it makes them brittle and they crack, and if left in oil-colour and allowed to dry their sharpness is destroyed for ever. Stencils should always be laid flat when done with, with a sheet of paper between each pattern, which keeps them straight and level and ready for use. Good stencil brushes are of course a necessity for producing good work: these are round in form, with short stump handles, with the hair set in tin. The hair is a solid close-set mass, perfectly level at the end, and about 1½in. long. This seems an exceedingly simple brush to make, and one would think that any brushmaker would be able to make good ones, but this is not the case. And it is not so strange when we consider the manner in which the brush has to be used in working—dab, dab, dab, thousands and hundreds of thousands of times. We find that the bristles must be of the very best quallity, or else they curl up, and so become useless; they also require to be fixed in the handle or stock with a cement impervious both to water and spirits, and which will bear the incessant vibration to which it is subject without breaking. If this is not so the cement soon gets broken, the bristles get loose and come out, and the brush is done for. We have not hitherto been able to find any stencil brushes which fulfil all the conditions required so well as those made by Messrs. Hamilton & Co., and although we have used them for a great number of years, we have not yet found any of their make which have either curled or come loose. We make no apology for giving this unsolicited testimonial to the quality of these brushes, inasmuch as it is often of great service to know where to get good tools. It is often said that a good workman can work with any sort of tools; this may be so to a certain extent, but there can be no doubt but that he can work much better with good tools than bad ones. Stencil brushes are made of all sizes, from a quarter of an inch to five or six inches in diameter. These also, after being used, require to be well washed before being put away, and the paint and colour carefully cleaned out from the bottom or stock end of the bristles.

(*To be continued.*)

A PAINTED CABINET.

ONE of our illustrations this week represents a painted cabinet to contain letters, correspondence, and papers. It was designed by and belongs to Mr. W. Burges, architect. The prevailing colour is a red ground with gold ornaments, the roof being diapered in a tile-pattern of different transparent colours, the ground underneath being silver. The figures in the three gables at the top represent Architecture in the centre, Geometry and the Earth at each end, the former a female figure holding compasses, the latter a male figure clothed with leaves holding in one hand a tree and in the other a block of stone; immediately below this come the seven lamps of architecture. The small heads in the quatrefoils on the external face of the doors represent celebrated architects, viz., Vitruvius, Giotto, Sabina von Steinbach, and Mnesicles; and at the junction of the framing are the disagreeables of architecture, viz., Contract, represented as a hideous monster cut to pieces, because contracts are often broken; Measuring and Valuing, a monster with a rule; Arbitration, a monster showing empty oystershell; Specification, a monster writing; Extras, a mermaid playing on a shell; Law, a monster, his tail interlaced with pieces of money between. On the inside of the doors are Painting and Sculpture with bells over, inscribed with the names of celebrated artists.

Wilton Church, Taunton, was reopened on Sunday last, after restoration and reseating.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE opening meeting of the Royal Institute of British Architects for Session 1870-71, took place on Monday evening last. The President, Mr. T. H. Wyatt, occupied the chair, and there was a very good attendance of Fellows and Associates. The minutes of the last meeting having been read and confirmed, a list of subscriptions and donations to the library was read.

Professor Donaldson announced that among the deaths since the last meeting were those of Mr. J. W. Papworth, Herr Zocher, a Dutch architect of eminence, and Signor Poletti, of Girgenti. The Professor said that he intended to read a memoir of the late Herr Zocher at the next meeting.

Mr. T. H. Wyatt then read

THE PRESIDENT'S ADDRESS.

After some introductory remarks, the P proceeded to refer to the present

POSITION OF THE INSTITUTE.

As far as numbers and income are concerned, its position with reference to past years may be said to be fairly satisfactory:—In 1869 there were 265 Fellows, in 1870 there are 275; in 1869 there were 241 Associates, in 1870 there are 243. (Several Associates have recently passed up into the class of Fellows.) In the list of Honorary Fellows, Honôrary Members, Honorary and Corresponding Members and Contributing Visitors there is little difference. In 1869 there were only five Students, in 1870 there are seven.

It is a matter of regret that, with reference to this latter class, the efforts of the Council have not been successful. It is one which they are in every way anxious to encourage. The advantages are, it is believed, considerable—the subscription very moderate; and yet, in proportion to the number of young men engaged in the offices of metropolitan architects, the result is discouraging. In reference to the anomaly of the Institute being able (under its charter) to elect a President from the class of "Honorary Fellows," or persons unconnected "with any branch of building as a trade or business," whilst we are unable to do so from the class of "Honorary Members," or persons not being British architects, "but being eminent for their works or scientific acquirements" (a class subsequently formed under the bye-laws of the Institute), it was suggested that it would be much simpler and more natural if these two classes could be merged in one—"Men eminent for their works or scientific acquirements, not being British architects or connected with any branch of building as a trade or business, and resident in the United Kingdom." The total number of members, including *all* classes, amounts this year to 624. This is not a very satisfactory result, compared with the Institution of Civil Engineers, which now numbers a total of 1,885 members, of which no less than 177 belong to the student class, as compared with the Institute's 7. Believing that the number of architects practising in England is greater than that of the engineers, the President trusted to see a larger number of members and associates joining the Institute, and lending their individual aid to that power and influence which numbers invariably carry with them. After urging the necessity of something being done to increase the number of students in connection with the Institute, Mr. Wyatt alluded to the establishment of the "Voluntary Examination Classes," which, however, was of such comparatively recent date that it was difficult to speak with any confidence of its practical result. He thought it would be generally admitted, in the words of former examiners, that the Institute had in this matter, "done its duty in the most liberal and effective manner, and is entitled to the gratitude of all young men now entering the profession or preparing to do so." Financially (excluding the noble contribution in 1868 of £500 by Sir William Tite to the Library) the position of the Institute was as follows:—In 1868 the receipts were £1,882 8s. 3d., and the expenditure was £1,795 14s. 9d., leaving a balance of £86 13s. 6d. In 1869 the receipts were £1,951 19s. 5d., and the expenditure was £1,818 17s. 1d., leaving a balance of £133 2s. 4d., thus giving in the two years an average of £109 17s. 11d. excess of income over expenditure, a margin showing prudent caution on the part of the executive. During the last year a sum of £300 has been invested in the purchase of £321 14s. 4d. of Consols out of "ordinary funds." In all cases the moneys paid for "composition" by members have been duly invested. Special donations of £50 towards the establishment of Architectural Art Classes, and £25 to the Architectural Museum have recently been made. This liberality (and in a society with the Institute's limited income it may justly be so called) has, in addition to expenses of the Voluntary Architectural Examination, amounting to about £120, considerably diminished the resources of the Institute and will leave but little balance in hand at the close of the present year. This closeness of income to expenditure is, in one respect, specially a matter of regret. One of the past presidents said, some years ago, "We ought now to have a competent paid secretary, whose whole time shall be at the service of the society. It was suitable to the early years of our untried institution to depend on the gratuitous labour of honorary secretaries, but we have overgrown such a mode of treatment." Mr. Wyatt said he shared this feeling fully, and so did many members of the Institute. There was an impression abroad that under its charter the Institute was bound to have two "honorary secretaries," but there is not a word in the charter about their being "honorary," or even that they shall be architects. It does not say that there are to be two secretaries, and in one of the bye-laws it says that the "paid officers of the Institute shall be an assistant secretary, a clerk, and a librarian." The same power that made this bye-law would enable the Institute to drop the office and the words "assistant secretary" (now held by its accomplished Fellow, Mr. Eastlake) and to substitute for them the simple word "secretary." Before the annual meeting of the Institute next May he hoped they would see their way clear to indulge in the luxury of one properly paid working secretary, whose whole time shall be at their service. Happily, Professor Donaldson (than whom no man in the kingdom is better qualified for the post) will continue to discharge the duties of "Honorary Secretary for Foreign Correspondence." In the Institution of Civil Engineers such an arrangement as a paid and an honorary secretary works most harmoniously and beneficially, and it would doubtless do so in the case of the Institute of Architects.

OBITUARY.

Since this time last year, of Fellows, Mr. Burn, Mr. H. Garling, Mr. J. D. Hopkins, and Mr. J. W. Papworth have passed away. Herr Zocher, an honorary and corresponding member, and Mr. Alley, an associate, have to be added to the list. Mr. Donaldson has already done full honour to Mr. Burn's career. The President said he had never known a man of higher or more independent honour than Mr. Burn; he was fearless in his assertion of what he believed to be just and right, and hence the almost unbounded confidence which his clients placed in him; such a list as few (if any) of the profession have ever owned. Mr. Garling and Mr. Hopkins were early members of the Institute, the former having been elected a fellow in 1848, and having been a member of council; the latter elected in 1847. Mr. J. W. Papworth was elected a fellow in 1846, and has served on the council; he was for many years a most constant attendant at our meetings, one deeply interested in the welfare and advancement of the Institute, and not less deeply read in the practice, history, and literature of his profession.

ORDINARY MEETINGS, &c.

In the name of the Council the President urged the members to aid in this matter, and to remember that well-arranged descriptions of works of importance, superintended by individual members, may be most useful and interesting, as illustrating varied views and treatments of the same subjects, and frequently calling attention to the application of new materials and new appliances.

The Council wished further to remind members of the 29th bye-law, which says that —"All members, whether Associates or Fellows, are expected within twelve months after their election to deliver an original paper to the Council on some subject connected with architecture, or to make a donation to the library or collection." These "expectations" of the "early fathers" of the Institute have not yet been fully realised, though in some instances the bye-law has been interpreted and complied with in a very liberal manner. Money donations to the Library Fund, amounting to £10, have been received during the recess, and among them is the generous gift of 25 guineas from Mr. J. Humbert. On the other hand, contributions in the shape of papers have been promised from Mr. B. Ferrey, Professor Ansted, Mr. E. Salomons, Mr. H. Currey, and also from Mr. W. H. Barlow, the eminent engineer, and the President. A committee, consisting of Professor Kerr, Professor Hayter Lewis, and Mr. Wyatt Papworth, has been nominated, with a view to procure and select papers for the ordinary general meetings.

SUGGESTED AMALGAMATION OF THE ARCHITECTURAL SOCIETIES.

On this subject Mr. Wyatt spoke as follows:—At this moment there are, I believe, in existence no less than eight societies, all more or less associated with objects connected with architecture and kindred to our own:—1, the Institute; 2, the Architectural Association; 3, the Architectural Alliance; 4, the Architectural Museum; 5, the Architectural Exhibition; 6, the Architectural Benevolent Institution; 7, the Architectural Publication Society; 8, Architectural Art Classes. Now if subdivision weakens, if a stream diverted into half a dozen different channels takes from the power of the original current, and if "union is strength," would it not be wiser and probably more successful if all these societies, working for ends tending to advance and benefit one profession, could be united and worked, if not under one management, at least, as one society, one powerful body? I am not the first of your Presidents who have felt that some effort might be made in this direction with advantage, and though I am probably treading on delicate ground, I cannot help feeling that it would only require time, patience, and tact, to realise a good deal of the object I have in view. When a benevolent society was sought to be established by the Institution of Civil Engineers, it was not left to the individual action of one or two zealous and kind-hearted members only, as it was with ours. The matter was taken up by the council of the Institution and a sum of £22,000 was raised in a few weeks, and its funds are administered by a committee of seven subscribers, of whom the president and two members of council are *ex-officio* members. I am ashamed to confess that I do not know whether any attempts have hitherto been made to realise these objects, beyond those alluded to by Mr. Beresford Hope with reference to the "Architectural Museum," but I cannot think there should be any serious obstacle to the union of three societies like the Institute, the Architectural Association, and the Architectural Alliance, whose objects are so similar, if the union was approached in a spirit of conciliation and mutual trust. This junction being realised, and suitable premises being obtained, the five societies last named might naturally find their home under one roof. The Institute, consisting of 624 members, was founded "for the general advancement of civil architecture, and for promoting and facilitating the acquirement of the knowledge of the various arts and sciences connected therewith." The Architectural Association consists of 550 members, engaged professionally in the study or practice of architecture, and of those interested in the various arts and sciences connected therewith, the Association dwelling specially on the importance and necessity of a more complete and systematic education of architectural students. The objects of the Architectural Alliance, established about 1862, are to promote unity of action and good feeling throughout the country at large, and to aid in improving all matters connected with professional practice, such as competitions, unity of professional charges, contracts and agreements with builders, &c. The Alliance now includes nine or ten other metropolitan and country societies, and appears to be in full action. Here then are objects, surely, most closely united—the "Association" devoting its great and careful energies principally to the education of the students of architecture; and how successful their energies have been, and how deep an interest is taken by the younger members of our profession, by our assistants, and by the pupils of London offices, is shown by the fact that, in the last year, 103 new members have joined the "Association."

UNITY OF ACTION.

Whilst on the subject of "unity of action," let me say a few words on the desirableness of that unity in the most comprehensive way and in all that affects our professional action. We have established a code of charges which is accepted generally by the profession throughout the kingdom as equitable and as its guide, and which has been recognised by some of the courts of law as fairly binding on employers and employed. Why should we not lay down one to be our guide in all matters of competition (since competitions, in spite of their many inconsistent and unjust results, will probably still be reverted to)? Why not seek to aid by the power and influence of the Institute the laudable exertions which have for some time past been made in this direction by the Architectural Alliance? Why not seek to form amongst ourselves a court of appeal for all questions of professional etiquette and conduct? Why not agree to certain general conditions of contract which may be recommended to the profession by the Institute as proving an equitable basis of contract between our employers and the builders engaged in their works? Your council has had frequent meetings and discussions with the committee of the Builders' Society, and has agreed upon certain general headings for conditions of contract between employers and employed, which it thinks equitable and which will shortly be submitted to a general meeting of the Institute for approval and adoption. They have been approved by the committee of the Builders' Society, and I am informed that all the tenders lately submitted for the great work at the Government offices were made on the understanding that these general conditions formed the basis of the contract. I am glad to find that my predecessor, Sir William Tite, sanctioned with his experience the equity of having a reference or appeal from the decision of the architect on some points, though not of course on questions affecting the quality of the work or of the materials. The absolute power often claimed by some engineers and architects, of deciding all questions connected with the contract, and its intentions even, appears to me contrary to every principle of equity, and though some may still cling to such powers, we have abundant proofs how painfully and yet how ineffectually such powers work. We can all remember the lingering years of litigation and expense connected with the great case of Mackintosh *v.* the Great Western Railway Company, in which Mr. Brunel's decisions were disputed. The case of Smith and Knight *v.* Penarth Dock Company has been for years before the courts, and is now hung up in Chancery in spite of Mr. Hawkshaw's powers under the contract, and Mr. McClean has been equally powerless to enforce his award in the case of Hill *v.* the South Staffordshire Railway, though his powers of decision appeared unlimited; this case has now been fourteen years in litigation. I believe that many engineers of the highest position are now in the habit of introducing arbitration clauses in their contracts, and that it is by no means unusual to nominate the President of the Institution of Civil Engineers for the time being as the arbitrator between the engineer and contractor engaged on the work, or leaving it to him to nominate the arbitrator, an arrangement sanctioned by the solicitors of the various public bodies interested.

And may I ask why there should not be one General Building Act applicable to all towns in England with a certain population (and with powers to enforce the provision of the Act), instead of having upwards of 200 corporations and local boards to introduce varied and conflicting regulations involving much uncertainty, and sometimes unnecessary trouble to the architect practicing much in the country? The Town Council of Liverpool has postponed any amendment in its local Act, in the hope that Government may introduce one general Act. It surely would not be impossible to arrange one Building Act which would be sufficiently broad and comprehensive to meet the various conditions of materials and local customs, and sufficiently elastic to admit of the introduction of novel materials or of improved modes of construction.

PRESENT AND PROSPECTIVE.

If the prospect of a real alliance amongst all these bodies is too visionary and hopeless, then, at least, let us have mutual sympathy and respect, and, as far as possible, co-operation. The success of any one of these bodies must aid in the great work we all have in view. The education and advancement of the architectural student and pupil is an object of as great moment to the architect as it must be to the interests of society. The formation of a student class by the Institute itself; the institution of Architectural Professorships at King's College and the London University; the various classes and courses instituted by the Architectural Association; the establishment of a Voluntary Architectural Examination; the Soane Medallion; the travelling studentship of the Royal Academy; the Pugin Travelling Studentship; all offer benefits to the architectural student and pupil of the present day to which we of a passing generation were strangers. They are to be largely congratulated on such advantages, and I trust there is little doubt that the future of our profession will proportionately bring forth fruit. What such opportunities are doing for the *professional* student, for him who will hereafter have to earn his bread by his own hand and head, the establishment of the Fine Art Professorships at Oxford and Cambridge will, I hope, do for those studying in the Universities, and who from wealth and position naturally form the principal class of the architect's future employers. Hitherto, the region of art in any shape was, if not repudiated in the Universities, at least ignored; and I am sure there are many members now present who will bear me out in the assertion that some of our greatest professional difficulties and discouragements have arisen from a want of knowledge and sympathy with architecture itself, or with the other arts so intimately bound up with it among some of our employers. After dwelling on this point at some length, Mr. Wyatt proceeded to notice the step in advance lately taken by the Royal Academy in opening a new school within its walls specially devoted to the study of architecture. The members of the Academy deserved thanks for this concession, tardy though it was, and the architectural members of the Academy (with whom Mr. Wyatt imagined the appointment rested) merited especial praise for having selected as the future master or director of this school Mr. Spiers, whose early career has been so brilliant, and who, from education, power and zeal, is most admirably qualified to aid and direct the future students. The establishment of these classes ought to be universally known amongst metropolitan students. Printed regulations and instructions will soon be issued, and he trusted that every advantage might be taken of this boon, thus adding another to the several existing opportunities which the architectural student of the present day possesses for perfecting himself in the study of his profession.

ARCHITECTURE AND THE STATE.

On this subject Mr. Wyatt said: It is not easy for an English architect to avoid dwelling on the little encouragement given in this country by its Government to the development and advancement of his profession, or (I was going to say) to the honour of its professors, but I have to remember that lately two of our body have been selected for such honour as the Crown confers on art, and that another member will, it is stated, be similarly complimented. It has been asked "Is *Imperialism* necessary for this?" I do not know that it is, but I do know that under Imperial rule in France, in Austria, and in Russia even, far more is done towards such ends than in England, with all its boasted wealth and energy. What marvellous progress has been made in France under the strong will and ambition of its late ruler! an ambition to hand down to posterity his name in connection with the grandeur and beauty of his metropolis, with the embellishment of the great cities, and the restoration of the great historic monuments of his country, and, though misfortune and reverse are sitting heavily on his later years, his name will, in history, be held in honour for the encouragement he has given to the architecture and art of his country.

NEW AND PROJECTED WORKS IN THE METROPOLIS.

Of the great public buildings in the metropolis, now in progress or recently finished, the following may be classed as "National Works," undertaken by the Government and paid for by the country, viz.:—1. The Foreign Office (the India Office being paid for from Indian Funds) and the Home and Colonial Offices, for which tenders have been lately submitted. 2. The London University Building in Burlington Gardens. 3. The completion of the South Kensington Buildings, commenced by Captain Fowke. 4. The Rooms for the Learned Societies in Piccadilly. The "Albert Memorial," for which so large an amount has been raised by the subscription of individuals, from our Queen downwards, and the "Hall of Arts and Science," which may fairly be classed as a joint-stock undertaking—important and costly works as they may be—can hardly be classed as "national works, undertaken by the Government and paid for by the country." The "Law Courts," when realised, may, perhaps, come under that denomination, for they have shared the usual fate of Government works—procrastination and indecision, and have been bandied about from one commission or commissioner to another, from site to site, and from architect to architect; but, inasmuch as they will mainly be paid for by a fund which has accumulated from the suitors, I can hardly give Government credit for great liberality or energy in this matter. Happily we may at last believe that the site, the plans, and the architect have been finally decided on, and that in the early spring we shall have evidence of more energetic action than is at present apparent. I have no doubt that the proper site has been at last fixed on, and as little that this great work is in the hands of an accomplished and able artist, from whom we may fairly anticipate a result that will do honour to his name and credit to our profession. That part of the Government offices comprising the Foreign and Indian Offices is at last complete, and a new contract has lately been entered into for the completion of another portion, the Home and Colonial Offices. In this great work, timidity and indecision seem to have largely prevailed. The prize block plan for laying out the Government offices (in the competition originated by Sir Benjamin Hall) has been disregarded, the new buildings seem to have no connection with the other public offices as regards style or position; they have been done piecemeal instead of dealing boldly and at once with the whole group, wasting money in the tenancy and occupation of inconvenient and detached offices now rented at heavy rates, and giving increased value to adjoining properties, which will ultimately have to be purchased. The London University, in Burlington-gardens, recently completed, was next noticed by the president, who in congratulating Mr. Pennethorne on his successful work, announced that it is in contemplation by the Sovereign to add to his honours, and thus to mark the sense entertained by Government of the long and faithful services of this gentleman. The South Kensington buildings and the group in Piccadilly were next referred to as making considerable progress. Within the block of buildings that surround the old court of "Burlington House," on three sides there will be housed six important literary and scientific societies and a central post-office:—The Royal, Geological, Chemical, Linnæan, Astronomical and Antiquarian Societies; all will be accommodated. In two years from this time we may hope to see the completion of this important work.

There seems to be an indifference and apathy on the part of our rulers and our Parliament to aid in adorning the metropolis, or to do for our profession that to which the rulers of Continental States attach such importance. Almost all is left to individual energy and liberality, and a spirit of parsimony reigns over the art administration of this country, as it seems to be doing in many other departments, and yet some allowance should be made for the Government of this representative and independent country. Here, London is but a spot in the political horizon—a mere atom of the wealth and energy of the kingdom. Manchester, and Liverpool, and Glasgow, and Bolton, and Leeds, all claim their share in the power and government of the state. Not as in France, where Paris is the sun, round which all their cities revolve and worship, and for the adornment and glory of which every Frenchman is (or rather was) prepared to make any sacrifice. I cannot better illustrate the difficulty the Chancellor of the Exchequer must feel in dealing with public funds for the adornment of London than in reading an extract from the letter of an accomplished and influential architect practising in one of our largest towns. I had applied to him for aid towards the funds for the restoration of S. Paul's Cathedral; he writes thus:—"I hope the fund for the Cathedral will be raised, but Parliament has done so much for London at the cost of the country that there is not much disposition in the provinces to subscribe for London objects, even when, as in this case, one of national interest. The remark frequently made is, the nation provides London with parks, museums, galleries and libraries, whilst in Manchester, Liverpool, and other large country towns, we have to find them for ourselves. Let the ratepayers of London do as much for themselves as we have to do for ourselves." Mr. Wyatt then proceeded to pass in rapid review the many great works recently completed or now in progress in London. Firstly, he referred to the Thames Embankment, and congratulated Mr. Bazalgette on its design and workmanship. The removal of Middle-row, Holborn, was next spoken of as a commendable and long-needed improvement, and the Corporation of London was complimented on the New Meat Market, in Smithfield, recently erected from the designs of Mr. Horace Jones, Fellow of the Institute, and City architect. The recent improvements at Guildhall, the new City Library and Museum, and the Holborn Viaduct, were next noticed. Of the merit and stability of the latter work the president had no doubt. The two large railway hotels at Charing Cross and Cannon-street, by Mr. Edward Barry, and the Midland Railway Hotel, by Mr. G. G. Scott, were the next works referred to. Regarding the latter, Mr. Wyatt said he was not aware of any instance in this country in which the services of the engineer and architect appear to have been so thoroughly associated or to have realised such a happy result. The new S. Thomas's Hospital, at Stangate, by Mr. Currey, and the various hospitals and infirmaries built or building by the Metropolitan Asylum District Board, were then mentioned. The latter buildings comprise two large asylums for the insane poor, each accommodating 1,620 patients, and four hospitals for fever and small-pox cases, capable of treating from 5,000 to 6,000 cases annually, at a cost of nearly half a million of money, all paid for by the ratepayers of the metropolitan district.

PROVINCIAL WORKS.

If the metropolis has been thus busy for the last few years on works of great public benefit and improvement, it cannot be said that the country has been idle. In Glasgow, we have in hand a great university group, not added to bit by bit, but started "*ab initio*" with unity of plan and purpose, and with such architectural pretensions and importance as its educational purposes legitimately call for. In Oxford, there has been of late and still exists much architectural vitality. This is exemplified in the Exeter College Chapel, the new works at Balliol and at Christchurch, the restoration of the Cathedral, the new Keble College, and the churches of S. Philip and S. James, and of S. Barnabas. In Cambridge, the chapel at S. John's, and the new wing to the library, by Mr. Scott; the new court at Caius, and the new buildings at Jesus College, by Mr. Waterhouse; the important Whewell buildings at Trinity College, with the museum and library, by Mr. Salvin; and the contemplated enlargement of Pembroke College, all prove that Cambridge is not behind her sister University in such work. The new Dulwich College and the Charterhouse buildings at Godalming, and a new chemical theatre and laboratory at Eton were next enumerated. In Manchester a new Town-hall is just begun, and a new Exchange is in progress. In Liverpool a new Town-hall and an Exchange, with a large pile of public offices, have just been completed. In Rochdale, Bradford, and Belfast new Town-halls are in progress, and at Chester a building of similar purpose has lately been completed. All these works, important as they are, are but as drops in the great sea of architectural works now in progress in this country. Nothing has been said of the numerous public halls of companies or societies, such as those of the Drapers' Company, the Haberdashers' Company, and the Inner Temple, in London; or of the public buildings undertaken by corporations or counties, such as the public baths at Newcastle, the Philosophical Institution and Library at Bristol, the Assize Courts at Durham, the County Lunatic Asylums building at Berkshire, Lancashire, Yorkshire, Cheshire and Herefordshire, or of those for boroughs at Ipswich, Leicester, and Beverley; and the Guildhall and municipal buildings at Plymouth. Nor has allusion been made to the numerous private mansions of great importance now in progress in various parts of England, or to the great churches spread and spreading broadcast over the land, though there are many of such great merit and novelty as to demand special attention if time did but permit; or to the chapels, monasteries, convents and synagogues, which are hardly less numerous; or to the schools in towns and rural districts. With regard to the cathedrals of England and Wales, at this moment there are very few that have not received, or are not receiving, careful and tender restoration or reparation. At this moment no less than fourteen English and three Welsh cathedrals are entrusted to the care of Mr. Scott, in many of which important works are actually in progress, in others merely in contemplation—viz., Westminster and its Chapter-house, Salisbury, Gloucester, Chester, Exeter, Lichfield Peterborough, Hereford, Ely, Oxford, Bath, Ch chester, Ripon, and Worcester as regards i choir, S. David's, S. Asaph, and Bangor in Wale The work at Bristol Cathedral, under Mr. Street, promises to be as interesting as it is important. Lincoln Cathedral has been entrusted to the care of Mr. Pearson. If the public buildings are thus multiplying in number, and improving in designs it cannot be said that the street and shop architecture of the metropolis is neglected. In the Belgravian district and in other parts private houses have lately risen with considerable architectural pretension and adornment, and the thanks of the Institute of Architects were due to the late Lord Westminster, who determined to rebuild and beautify a large district of the metropolis at the cost of much income to himself. This hurried list of works, either actually in progress or but recently finished, is full of interest for the architect, and of pride for the citizen of a country where such great efforts are attributable almost entirely to the individual zeal, energy and wealth of its inhabitants.

CONCLUSION.

There are several other matters of deep interest for our profession which press on my mind, and which I would gladly have referred to, but in the incomplete condition of some of them, in the delicate nature of others, and in the fact that if health and life are spared me, it will be my duty, in the natural order of things here, to trespass on your patience again next year, it will be better that I bring this crude paper to a close. It would ill become me, however, as the President of an English body of architects, to refrain from expressing, what I am sure all here and all in our ranks elsewhere must feel deeply, our sympathy and sorrow for the architects of those two great European countries now engaged in such a deadly war, but especially for those of France, trodden down and almost devastated as that country is by the presence of an enemy in her fair fields and in her cities and strongholds. We have no less than forty-four French and German architects members of our body, and three of these have received the honourable distinction of our Queen's gold medal. It is not for me, holding the quasi-official position I have the honour of doing, to attempt to apportion the blame of this bitter struggle (for blame undoubtedly there must be in these "soi-disant" days of civilization and Christianity, when two of the foremost nations of Europe are seeking how most readily to destroy the other and undo all the labour of years in art and progress). Individually, I can have no doubt of the deep blame and responsibility. Unluckily, all that we can do is to hope for a speedy termination to such misery, and to be thankful that a similar visitation has not fallen on our own land—a visitation from which France, with all her energy and talent and vitality, will not recover for many toilsome years. In conclusion, the President paid a warm and graceful tribute to Professor Donaldson.

DISCUSSION.

Professor Donaldson, in proposing a vote of thanks to the President for his address, remarked on the disparity in point of numbers existing between the Institute of Architects and the Institution of Civil Engineers. This was to be accounted for by the fact that the latter body admitted to membership others than civil engineers—viz., contractors, but the Institute of Architects had, from the first, kept aloof from admitting builders and persons other than architects—in fact, it was established with that primary object. He deprecated the proposed union of the various societies named in the address, because he believed that where what was called "unity" existed, there also existed sluggishness. He thought it far better, for instance, that the young men of the profession should be independent, and manage their own Association. The existence of the various societies led to emulation and competition in the race towards perfection.

Mr. Marrable seconded the proposition, which was supported by Mr. George Godwin. The latter gentleman, while disapproving of the project of uniting all the various societies, was of opinion that the Architectural Museum and the Architectural Benevolent Society might, with advantage, be taken into closer connection with the Institute; not only would the societies in question greatly benefit by such an arrangement, but increased *prestige* would accrue to the Institute itself.

Mr. Benjamin Ferrey regretted that no mention had been made by the President of what he (the speaker) called an attempt, on the part of a high official, to crush the Institute. He thought that the Institute should be outspoken on such a matter.

The President, in reply, said that he had not touched on the topic mentioned by the last speaker from motives of delicacy. He should, however, have an opportunity of doing this on a subsequent occasion.

The meeting then terminated.

ARCHITECTS' DRAWINGS.

THE general question of the ownership of architectural drawings has been opened in a new form in a case which came before the Court of Exchequer, on Friday. Mr. Ebdy, an architect, brought an action against the Rev. Mr. M'Gowan for his claim for making plans of a parsonage-house to be erected at Holmside, Durham, and at the trial before the Lord Chief Baron the jury found a verdict for the plaintiff—damages £106. Yesterday Mr. Aspinall moved, by leave reserved, for a rule to show cause why the damages should not be reduced by £97 1s. The plaintiff prepared the plans, but the house was not erected, and the evidence as to custom was that an architect was paid by commission of 5 per cent. on the actual cost of the building if constructed, and of 3 per cent. on the estimated cost if it was not. Some difference having arisen with regard to the terms of payment, the defendant wrote to the plaintiff that he would send a cheque for his charges if he forwarded the plans, but he objected to do that on the ground that it was contrary to the rules of the profession. Mr. Baron Bramwell said that if an architect were employed to make plans of a building, and paid for doing so, it seemed preposterous—almost childish—to say that he should retain them. How was the building to be constructed? The court granted a rule *nisi*.

COMPETITIONS.

Boys' School for the Royal Commission of the Patriotic Fund.—It having been determined by the members of this Commission to erect a building upon their land at Wandsworth for the accommodation of 200 boys, in lieu of the present temporary erections, designs were invited from the following architects, viz., Messrs. Blomfield, Dawson, Giles & Biven, Saxon Snell, and Tasker. The design submitted by Mr. Saxon Snell has been accepted, and he has accordingly received instructions to prepare the necessary working drawings and estimates for the erection of the building, which is calculated by him to cost £15,000, exclusive of engineering works, drainage, fittings, &c.

Limited Competitions.—Mr. Thomas Henry Watson, A.R.I.B.A., in his inaugural address as President of the Architectural Association, on Friday evening last, referred to competitions as follows:—"There have been, I think, no competitions of any unusual interest this year. Some good ones have been proposed, and generally there seems an inclination on the part of promoters to save the profession at large the great expense of preparing, and themselves the great labour of examining, a vast number of designs. The principle of limited competition seems to be making progress, and in one otherwise inconsiderable affair it is pleasant to notice that an honorarium was given to each competitor—a small recompence, it is true, for the time and money expended (generally much in excess of anything that may be given as premiums, and in which it is evident the profession is constantly playing a losing game)."

SCHOOLS OF ART.

Derby.—The Prize Drawings submitted to the South Kensington Museum in the last National Competition have been lent by the central authorities to the Derby School of Art, where they are now being exhibited. The opening of the exhibition was also the occasion of opening the new building for the School of Art. The collection numbers upwards of 300 paintings, drawings, and designs, which were selected from a total of 87,000 works by art students.

Guildford.—On Monday week the distribution of prizes at the Guildford Science and Art Classes took place, the Mayor in the chair. The report showed that the school was in an eminently satisfactory condition; 48 students had joined the classes since their formation in May, 1869, 34 of whom had offered themselves for examination, 22 being successful.

Hull.—The annual distribution of prizes awarded by the Department at South Kensington to the successful competitors at the Hull School of Art took place at the Public Rooms, Jarratt-street, on Monday week, the Mayor (Alderman Witty) in the chair. From the annual report it appears that the number of students who have passed through the school during the year 1869 was 237. The morning class of ladies had diminished by 5 students, and the night school of male students by 11. There had been, however, a great increase in the afternoon class, which, standing at 38 in 1868, numbered in the last returns 52, and had since so greatly increased as to have rendered it necessary for the master to divide the class into two sections, giving two afternoons to each. At the Second Grade Local Examinations, held on the 10th and 11th March last, 77 students presented themselves for examination in the various subjects of freehand drawing, model drawing, geometry, and perspective; and of this number 46 were successful, and 55 subjects were passed. The more advanced students have commenced their studies from the life. Financially, the school is in a healthy condition, although considerable additions have been made to the examples for the use of architectural and mechanical students. A grant of £15 a year has been withdrawn, but the schools are free from debt.

Lambeth.—The drawing classes at the Lambeth Baths, in connection with the South Kensington Museum, were reopened on Saturday evening last, under the instruction of Messrs. Ellis, Morley, and Sadler, first-class certificated teachers. The syllabus of subjects comprises geometrical drawing, to meet the requirements of all engaged in the building and engineering trades; and will include instruction in the use of instruments, the construction of plane figures (straight and curved lined) from various data; plans, elevations, and sections of simple solid bodies, as cubes, prisms, pyramids, cylinders, cones, &c., with their intersections and developments. The advanced course will, in addition to the above, include instruction in isometric and perspective projection, and the projection of shadows. In architectural drawing or building construction, instruction in the principles of framing, drawing of plans, elevations, and sections of buildings, with examples of doors, sashes, floors, roofs, bonding of masonry, &c., will be given.

ARCHÆOLOGICAL.

Liverpool Architectural Society.—The third meeting of the session of the Liverpool Architectural and Archæological Society was held on Wednesday week, Mr. Vale occupying the chair. The paper for the evening was by Mr. H. H. Statham, jun., and entitled, "Notes of a Short Tour among the Lincolnshire Churches." The paper was illustrated by lithographed sketches of architectural features, ornamental details, mouldings, &c., also by some unpublished engravings of portions of Lincoln and Peterborough cathedrals, from the drawings of Mr. Edmund Sharpe, who lent them for the occasion.

Somersetshire Archæological Society.—We understand that it is intended to resume the *conversazioni* in connection with this society during the coming winter.

The Walls of Conway.—At the last meeting of the Corporation of Conway, a letter was read from Mr. Barker, a local antiquary, who was desirous of restoring the old walk around the walls of the town. Extracts from a letter from Sir Stephen Glynne were also read warmly approving the plan, which, if carried out, would, in his opinion, be the means of adding greatly to the attractions of the town. Sir Stephen considered that the walk, if restored, would surpass the promenade on Chester walls, as from the walls of Conway could be obtained one of the finest views to be met with in the United Kingdom. The plan seems to have met with considerable favour, although nothing has yet been done in the matter, as some property-holders object to the project on the score of not wishing to be overlooked.

Building Intelligence.

CHURCHES AND CHAPELS.

Annscroft.—A new church has been erected at Annscroft, Salop, by Messrs. Bowdler and Darlington, of Shrewsbury, from the design of Mr. J L. Randal, architect. The character of the building is of the Early English type. It is built of Red Hill stone, with Grinshill and Shelvoke dressings, and consists of nave, 48ft. by 21ft.; chancel, 20ft. by 21ft.; small vestry on the south side of the chancel, and a north aisle to nave, with a western porch; and is capable of holding 250 persons. The porch is surmounted by a bell turret and spirelet, about 50ft. high. The cost is £1,200.

Bisbrook.—A few days since the memorial stone of a new church at Bisbrook, Rutland, was laid by the Hon. W. C. E. Freke, of Bisbrook Hall. The new building is to be erected on the site of the old church, from the designs and under the superintendence of Mr. W. Langley, architect, Leicester and Uppingham. Mr. Dean, of Uppingham, is the contractor.

Bury St. Edmund's Church Building Society.—The annual meeting of this society was held at the Guildhall, Bury, on Wednesday week, Lord A. Hervey, M.P., in the chair. From the report read by the hon. secretary, it appeared that during the past year grants had been promised towards the restoration of the churches at Ashfield and Cockfield, and the attention of the consulting architect of the society had been called to the church at Stanningfield, whose foundation he reports to be in a dangerous state. During the past year grants had also been paid to Hegham and Thorpe Morieux, amounting to £55.

Ellaston and Wyaston.—The parish church church has lately been reseated and other alterations accomplished, by Mr. Thorley, contractor, of Ellaston. The gallery at the west end has been removed, and the unsightly and uncomfortable pews have been replaced by open benches of varnished pine. The floor of the church has been renewed throughout, that of the aisle being of Minton's encaustic tiles. New open stalls have also been placed in the chancel.

Highnam.—The interior of the Holy Innocents Church at Highnam, Gloucestershire, is probably familiar to many of our readers. Mr. Gambier Parry, who, as is well known, has been founder, architect, and painter, in his own person, is now continuing his scheme of mural decoration into the aisles. On a recent visit to the church we (*Bath Express*) found Mr. Parry occupied upon a frieze, which is to fill the upper portion of the north aisle wall. The design is processional in character, after the manner of Flandrin's famous work at S. Vincent de Paul, in Paris, the decoration of the spiritual school at Munich, and—to go further—the mosaics in S. Apollinare Nuovo, at Ravenna. The characters destined to figure in the procession are chosen irrespective of historic sequence, and are linked only by their position in the chain of Christian development. In the group already sketched in outline upon the wall are female figures, which by pensive sweetness of face and grace of attitude, recall the Virgin's companions in Raphael's "Sposalezio." Mr. Parry, by the way, disclaims all imitation; his designs he declares to be purely creatures of his own brain, yet it is not astonishing that the semi-conventional, semi-natural types which he adopts should bear to the elder examples of religious art, long reverently studied by him, at least the resemblance of kinship.

Ipswich.—Sir Shafto Adair has laid the foundation stone of a new Presbyterian Chapel at Ipswich. The church, which has been erected by Mr. Henry Luff, from the designs of Mr. F. Barnes, is in the Gothic style, the exterior being of Kentish rag and Bath stone dressings. The church is 78ft. in width and 38ft. in breadth, and the ground-floor will afford accommodation for 450 worshippers.

Llysfaen.—The parish church of Llysfaen, near Abergele, has lately been reopened for service, after undergoing extensive restoration. The church consists of a nave and aisle, with double roof and centre gutter. The north part, now called the aisle, is the oldest part of the church, the arcade and south part being built at a later period, and stonework being much superior. The church is built of the limestone of the locality, and the old walls have been retained and the arcade rewrought; but the whole of the windows are new, of Cefn stone, and of the Early Pointed style. A new porch and belfry has been built, and buttresses put in several parts to the walls. The old roof, which is of oak, has been as far as possible retained, and covered with deal boarding and new slates. The whole of the internal work is new, the nave seats being of pitch-pine, and those of the chancel of oak. The pulpit and font are of Bath stone, and the reredos of Caen stone and variegated marbles. The most conspicuous part of the internal work is the restoration of the chancel screen, which is of oak, the greatest part of it being new; but a portion of the old screen has been retained between the chancel and the vestry to show the character of the old work, the panels being perforated in a most singular manner. The cost of the restoration is about £2,000. Mr. G. E. Street, A.R.A., is the architect, Mr. J. Rhydwr Jones, of Rhyl, the contractor, and the work has been superintended by Mr. T. Chapelon. The National schools are now in progress and rapidly approaching completion at the same place, from designs by the same architect, the cost of which will be about £1,500.

Over.—The parish church of S. Chad, Over, was reopened on Wednesday, after restoration. The chancel has been entirely restored under the superintendence of Mr. Ewan Christian, the architect to the Ecclesiastical Commissioners, and the remainder of the building under the direction of Mr. Teulon. The church has been newly roofed throughout, the stonework newly dressed, the windows newly mullioned, and some fresh lights pierced. A new reredos by Minton has also been erected. The cost has been about £2,000. Mr. Beckett, of Hertford, was the builder

Shalford.—Shalford Church, near Guildford, was reopened a fortnight ago to-day, after several alterations and additions, the cost of which has been £700. The works just completed include new transept, new stalls to choir, and the removal of the organ from the gallery to the north transept. The work has been carried out by Mr. Mitchell, builder, of Shalford.

S. Asaph.—Mr. George Gilbert Scott has recently inspected the parish church at S. Asaph, with a view to its restoration. The churchwardens will,. on receipt of Mr. Scott's report, call a meeting of the parishioners for its consideration.

Throckley.—A new Wesleyan Methodist Chapel at Throckley was opened on Tuesday week. The chapel consists of a nave and east aisle; at the south end of the latter is placed the porch, with the bell turret. Part of the aisle is screened off for a vestry. The nave, 58ft. long by 23ft. wide, presents an imposing gable 38ft. high towards the road, in the lower part of which are three lancet lights, with a circular six-foil window over them. The turret is placed at the south corner of the nave. Mr. F. R. N. Haswell, of North Shields, is the architect. The entire cost has been £1,000.

Walton.—On Thursday week, the church of S. Mary, Walton, near Clevedon, Somersetshire, was reopened by the Bishop of Bath and Wells, after restoration. The works were commenced about a year and a half ago mainly through the liberality of Mr. R. Godwin, a neghbouring estate owner. Mr. J. Norton, of London, was the architect who had the superintendence of the work, Mr. R. Newton, of Wraxall, being the builder, while the carving, with the exception of the figures (which were done by Mr. Boulton, of Cheltenham), is the work of Mr. Margetson, of Bristol. The total cost has been about £3,000.

Worle.—The parish church of S. Martin, Worle, Somersetshire, was reopened on Tuesday week after restoration. The west tower and window have been restored and thrown into the church, and the western gallery removed. The roofs are open-timbered, with tracery principals and moulded cornices, and externally the nave and chancel are covered with Staffordshire tiles, and the north aisle with lead. An arcade of arches divide the nave from the north aisle; these were 20in. out of perpendicular, and have had to be taken down and rebuilt. The two windows on the north side have been filled with stained glass. On the north side of the chancel a spacious chapel has been erected, parclosed off by elaborate screens of carved wood. This chapel serves as an organ chamber and vestry, and provides accommodation for the school children. Beneath this chapel is a heating chamber. The old, quaintly-carved oak stalls, supposed to have originally belonged to Woodspring Priory, have been restored and fixed on the south side of the chancel, and a similar number of stalls, made to correspond, have been placed on the north side. The floors are laid with encaustic tiles, by Godwin, of Hereford. Open benches of stained deal have supplanted the old high closed pews. The church has been restored from plans by and under the superintendence of Mr. John Norton, architect, of London; Mr. Diment, of Bristol, was the contractor, Mr. Clontman acting as clerk of the works. The total cost was £1,500.

BUILDING.

Maidstone.—The tender of Mr. J. G. Naylar, builder and contractor, Rochester, being accepted for the works at the New Post-office, the same will be commenced at once. Great delay has been caused by the estimates exceeding the grant. The cost will be £3,147.

NOTICE.

With the aid of the new postal arrangements, which came into operation on the 1st ult., the Building News will in future be supplied through the post at 15s. per annum, instead of 17s. 4d. as hitherto. The halfpenny postal card will also be found useful to those who have scraps of building information, tenders, intercommunication queries and replies, &c., to send.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

To Our Readers.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

Letters relating to advertisements and the ordinary business of the Paper should be addressed to the EDITOR, 31, TAVISTOCK STREET, COVENT GARDEN, W.C.

Advertisements for the current week must reach the office not later than 5 p.m on Thursday.

Received.—T. A. H., H. & C., W. J. C., W. F., H. D. S., C. W., T. P., J. C., W. V., F. Bros., R. H., J. L., W. H. N.

F. B. V.—A rather silly question. Of course the size of the hotel and the number of bedrooms would depend on the accommodation required.

H. H.—Sketch and description to hand.

T. E. Knightley.—Next week.

W. Clement Williams.—The sketch came to hand, but will not be used.

J. B. W., Chicago.—A poor publication.

J. W.—Inquire for yourself of any of the well-known and respectable newsagents of Manchester whether the architectural publication you name has such a large circulation. You will find that it does not circulate one-fifth as much as the Building News or *Builder*.

◆

Correspondence.

COTTAGE HOSPITAL, LYTHAM.

(*To the Editor of the* Building News.)

Sir,—I have only this morning seen your journal of the 25th ultimo, in which appear a description and illustration of the Cottage Hospital, at Lytham. Some months ago, by request, I sketched a ground plan of this building, which is now being carried out by Mr. Littler, the architect to the new County Asylum at Whittingham. From Mr. Littler's description in the Building News, he evidently does not thoroughly understand the various uses to which some parts of one building are hereafter to be applied. Hence he has fallen into errors which have called forth Mr. Knight's vigorous denouncement of the whole scheme. I have well considered the plan, and even yet, with Mr. Knight's "well-intended hints" before me, fail to see the "errors of arrangement" which render this hospital so "fatal" to the cure of the diseases of its inmates.

Mr. Knight assumes that the "only means of light and ventilation to the central passage and staircase is from a skylight." Such is not the case. In addition to this skylight there is a large window in the north wall, over the staircase and above the roof of the bedroom marked A, which roof has been purposely kept low in order to obtain more light and good ventilation. Over the front door, at the south, a fanlight is placed, which opens for the same reason. The room A was never meant for the reception of patients suffering from infectious diseases, the two wards, B and C, being alone intended for such cases.

In reference to Mr. Knight's remarks upon the "only" scullery, I, it would appear that the sinks or slop places in connection with the lower wards have been overlooked. Although small, I believe they will be found sufficient for the requirements of these two wards. The larger scullery, leading from the kitchen, is for culinary purposes only. The arrangement, in my humble opinion, is not so "nasty" as Mr. Knight asserts.

And now for the "climax of all the deficiencies and defects." The washhouse, although not a detached building, has its entrance from *without*, the inner door being a *private* one for the person in charge, and only to be made use of on rare occasions. The "fumes of the foul linen" need not, therefore, enter the building by this means. Should, however, this arrangement at any time be thought unadvisable, a bricklayer may in a few hours effectually stop the communication. Mr. Knight makes sarcastic allusion to the "roomy mortuary." When it is considered that this place, 12ft. by 8ft., is also to be used for *post-mortem* examinations, it will not, I apprehend, prove so very "roomy" after all. As for the "hapless woman," she will be obliged to keep her curiosity in abeyance, and rest satisfied with the southern look out, as the north window, which is for ventilation alone, will be glazed with obscured glass.

The only matter, I believe, that I have not alluded to is the omission of a closet and scullery on the upper floor. This defect will, I trust, at some future time be remedied, but until this is effected it is purposed to substitute portable earth commodes, &c. These conveniences in the original plan were provided, but subsequently, in order to lessen the cost, such alterations were made as to necessitate their abandonment. Should there be at any time a disposition to further expenditure, I have always thought that the room A might be readily converted into a bath-room, scullery, and closet.

Apologizing for the length of my letter,—I am, Sir, &c. Joseph Holland.

County Asylum, Prestwich, Manchester.
Nov. 3rd, 1870.

COMPETITIONS.

Sir,—Under this heading in last week's issue it is stated that sixty different sets of plans have been received in competition for a dispensary and infirmary at Yeovil. Having the particulars of the above competition to hand, which states distinctly that the time for furnishing designs is extended to December 15, 1870, I am under the impression that a slight error has been perpetrated: can you rectify it, and oblige your correspondent? If within the limits of possibility, in common with many others, I should be gratified to see in the Building News from time to time more engravings of those designs selected by competition committees to bear the palm. They might "point a moral" and anything but "adorn a tale." Your occasional comparisons of selected and unselected designs were good, but why were they discontinued? I am, &c. F.

◆

Intercommunication.

QUESTIONS.

[2026] SURVEYORS' LICENSES.—Is it necessary for an architect and surveyor to take out a license for the purpose of valuing artificers' work, or when is it required so to do, and the cost of same?—A. B.

[2027] SCAGLIOLI.—Will any reader favour me with particulars as to materials and method of making scaglioli in imitation of marbles, or give the name, &c., of any work that does?—H. J. W.

[2028] TO BLACKEN BRASS.—Will you or some of your readers please tell me how to black a brass tube? I want a black that will not wear off, and one that will shine. —Tube.

[2029] PITCH PINE FLOORS.—What is the reason that these floors are always specified to be laid on a rough deal floor? Why not lay the pitch pine on the joists, in the ordinary way?—N. A. S.

[2030] CONCRETE PAVING.—Can you or your readers inform me if concrete would stand instead of flags for passages, areas, &c., and if it would stand exposure to rain, frost, &c?—C. F. W.

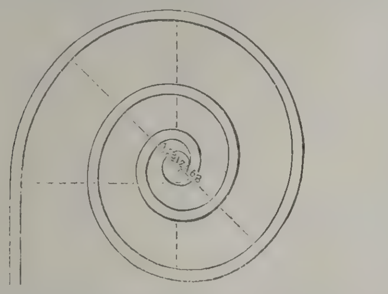
[2031] ROYAL ACADEMY OF ARTS.—Will any o your numerous correspondents kindly give me some information as to the admission of students to the Royal Academy of Arts? Is there any limitation as to the age the student should be; should he be, or have been a pupil of an architect? I believe the intending student, befor his admission as such, has to submit certain drawings fo approval; of what do the drawings consist? Are they to be original designs, or are they drawings made from measurement of some existing buildings, or are they simply some drawings which he may have made whilst in his master's office? Also what description of drawings should they be? At what time and how is the instruction given? and finally, how should application be made for admission as student?—Sine Metu.

[2032] SUSPENSION CHAINS.—Can any engineering friend give me a formula for calculating the effect of a travelling load on a chain or cord (not a suspension bridge)? I am not aware of any work bearing on the question, and have had to improvise.—H. A. L.

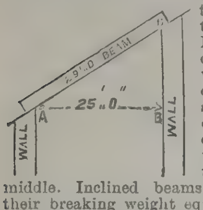
[2033] MOUNTING TRACINGS.—I am anxious to know how I can manufacture paste for the above purpose, sufficiently strong but more transparent than that generally used, and made by boiling flour in water. Can your correspondent "H. A. L.," or any other contributor to "Intercommunication" inform me of a process?—JUNIOR.

REPLIES.

[2003] ELLIPTICAL SCROLL.—If a line be drawn through the centre of the eye of the scroll, inclined about 45° to the direction of its intended length, and on this line a fourth of the eye's diameter be set off repeatedly each way, and the first point one way be made the centre of a semicircle with radius = 3 parts, the first point on the other side the centre of another with radius 5, then the second point on the former side with radius 7, then the second on the later with radius 9, and so on; a semicircle being struck from each point, but finishing with only an octant, we have a nearer approach to what was meant probably by "elliptical scroll" than that described by "W. W.," p. 340, which is only the *arithmetical spiral* or *involute of a circle*, and to be struck, if at all, by merely unwinding a band from a fixed cylinder, instead of his elaborate construction; though his curve is cooked so as to approach rather the more elegant *logarithmic, equiangular* or shell spiral. Of course all such forms are barbarous and pitiful decorative shifts, quite of a piece with the pompous ignorance of names like *elliptical*, &c., but required among tribes that get their "architecture" and upholstery for "Percentage on Outlay," and where professors thereof (save the mark!) write of *spherical triangles* for windows like those of Westminster triforium!—SNOBLAND.



[2012] INCLINED BEAMS.—In answer to "L. W.," I should advise him to get Hurst's "Architectural Surveyor's Handbook," in which there is much useful formulæ, tables, and memoranda on building, &c., and from which the following is extracted:—To ascertain the breaking weight of a beam supported at both ends, and loaded in the middle. Multiply the breadth in inches by the square of the depth in inches and divide the product by the length (between the supports) in feet. Multiply the quotient by 5 for oak and 4 for red pine (being the weights in hundredweights required to fracture a bar 1in. square and 1ft. long). In all cases when the load is uniformly distributed double the weight will be required to cause fracture than if placed on the middle. Inclined beams supported at the ends have their breaking weight equal to that of the same beams when horizontal, multiplied by the length AC, and divided by the horizontal distance A B. The breaking weight of "L. W.'s" beam will be about 276 tons.—FRANK CHESSELL.



[2012] INCLINED BEAM.—"L. W." will find in Hurst's "Surveyor's Handbook" a reply to his queries. The safe load on his 24in. by 24in. oak beam is 16¾ tons on the centre; the inclined beam is the stronger in the ratio of total length of beam to spar, the reason being that part of the stress is exerted as a thrust along the beam.—H. A. L.

[2013] DRY FOUNDATIONS.—Let your querist "Amateur Builder" try Engert and Rolfe's fibrous asphalte as an anti-damp course, a specimen of which can be seen at the Museum of Building Appliances, Maddox street, W., London; it is set in brickwork and stands in a tank of water. I have used all the kinds he mentions and find this is by far the cheapest and most effective, its cost being only 1½d. per foot superficial. The damp-proof course should be laid on the first course of bricks above the external ground.—ONE WHO HAS TRIED.

[2019] NEO-GREC.—The French archæologists have well-substituted this name for Byzantine, to denote the mediæval Greek Church style; in architecture, that of dome vaulting, as the Ogival or Neo-Latin was that of groin vaulting. If the term "Gothic" be used at all it ought, in ethnographical correctness, to apply quite as much to the former as the latter, if not more so. We might say Round-Gothic, Dome-Gothic, and Pointed-Gothic; though a truer equivalent than the latter for ogival would be "Groin Gothic," the English for *ogive* being not "pointed arch" but *groin rib*, which member the logic of our neighbours has always seen to be the essence of the system. An English writer, to recall the image of mediæval building will mention its "pointed arches,"—a French one always is "ogives."—SNOBLAND.

[2019] NEO-GREC.—This term, which should, I believe, be written né au Grec or né au Grecque, is applied to that style of French architecture founded on the principles of ancient Greek work. In England, in consequence of the absence of any academical system of instruction in architecture, the publication of Stuart and Revett's "Athens" and other works by the Dilettanti Society led to the reproduction, more or less faithful, of the actual buildings of Greece, which were set up sometimes in defiance of all consistency either with our customs or climate. In France the translation and republication of these works some few years later led to the introduction of the spirit and principle only of these ancient Greek works, so that original conceptions, Greek in feeling but French in their adaptation, corresponded to our English reproductions. One of the earliest né au Grec works is the column of the Bastille by Monsieur Duc (not Viollet le Duc). Other works by him are the Palais de Justice and the new Prefecture of Police, for which latter building the prize of 100,000f. was awarded to its author. M. Dubau's Ecole des Beaux Arts, M. Labrouste's Bibliotheque S. Germain, and M. Vandoyer's Bibliotheque Imperiale, are fine examples of this style, which abounds in modern Paris; its less pure examples are known to French students under the title of "Rageur."—ECOLE.

[2023] LIGHTNING CONDUCTORS.—Let "H. A. B." write to a maker of such things for information, say to Newall, 130, Strand, London.—H. A. L.

[2023] LIGHTNING CONDUCTORS.—The late Sir W. Snow Harris, who by a siege of half a lifetime succeeded in getting red tape to protect the navy from lightning, held that in this climate a conductor is safe if its sectional area nowhere falls short of three-fourths of a square inch of malleable iron, or a fifth of that quantity of *pure* copper; there being no record of a flash raising these metals in that mass to a fiery temperature. A thin band or tube does not theoretically require quite the weight of a solid rod, as there is more cooling surface, but this difference is small, or practically null. It has since been proved that hardly any commercial copper has *a third* the conductivity of the pure metal, so that unless copper of special purity were made for the purpose, iron must decidedly be the cheaper conductor, duration apart. As for the description and quantity of conductor, "H. A. B." must be led by no trader into the vulgar errors that pointed tops or insulation are any advantages. They will enable, in fine weather, some pretty electrical experiments to be shown, but it is now fully established that on safety they have no effect whatever. No insulator is worth a pin, and no conductor should extend an inch above the point protected. In hardly any building can the points needing protection be only one. To find them you have but to suppose a model of it before you, and a circular plane in your hands about as large as it would stand upon. Whatever point might be touched by the centre of the plane is a point liable to lightning-stroke, and requires protection by a conductor to the nearest metal gutter. None of these points can protect another, no chimney another chimney, or finial another finial. On the other hand, as we assume no building now to be without metal connexion from the gutters to the ground, in the form of water-pipes, any other conductor below the level of gutters is utterly superfluous, except as a trader's or "architect's" percentage-yielder. No cases can be found of injury to a modern building's exterior below its gutters. The entry is always down an unprotected chimney. But there are abundant cases of ships whose mainmast was protected being struck on another, on the bowsprit, or even a yard. And in a last century volume of the *Phil. Trans.* is a report, with several plates, of a Norfolk workhouse that was injured through having three conductors, the simple fact being that it had *no gutters or stack-pipes*, and was struck on neither of the three high protected chimneys, but at an outer angle of the eaves of a low-pitched hipped roof.—E. L. G.

◆

WATER SUPPLY AND SANITARY MATTERS.

BURTON-UPON-TRENT.—Great complaints have recently been made of the noxious effluvia arising from the Burton Town Commissioners' sewage tanks at Stretton, and a letter has lately been received from Mr. Samuel Leech, of Derby, solicitor, on behalf of the inhabitants of Eggington, Willington, and neighbourhood, intimating that had it not been for the Long Vacation in London he should have taken steps to procure an injunction against the Commissioners continuing the nuisance. The Commissioners, in reference to the matter, state that the works are carried out in accordance with the advice of Mr. Hawkshaw and Dr. Letheby, but that greater care shall be taken in deodorizing the sewage matter. They also urge that the exceptionally dry weather of the last two or three seasons must be taken into consideration before condemning the principle of deodorization.

DONCASTER.—The Corporation of Doncaster is about to expend nearly £20,000 on a scheme for applying the public sewage to purposes of irrigation.

EDINBURGH WATER SUPPLY.—The Edinburgh Water Trustees have resolved to promote a bill in Parliament next session authorising them to bring a supply of water to the city from S. Mary's Loch, Selkirkshire. The cost of procuring a supply of 15,000,000 gallons of water per day has been variously estimated at from £400,000 to £600,000.

REIGATE.—Extensive drainage works are proposed to be carried out in the west ward, Reigate, from plans by Mr. Baldwin Latham, C.E., at a cost of £13,000. Mr. Hayward will be the contractor. In answer to an application to the Home Secretary for the loan of the sum named, a letter has been received by the Town Council intimating that Mr. Arnold Taylor had been directed to hold an inquiry at an early date into the sanitary needs of the town.

◆

STAINED GLASS.

THE PRINCE CONSORT MEMORIAL WINDOW, GUILDHALL.—The window erected at the western end of Guildhall, in memory of the late Prince Consort, was uncovered by Prince Arthur on the 3rd inst. The window is a five-light transomed one, the lower tier double-panelled, so that the number of divisions is 15; there are also two side wings, occupied by four figures, representing Wisdom, Prudence, Justice, and Fortitude. The design, though of the nineteenth century, is intended to harmonise with the architecture of the hall, and is in accordance with the principle of treatment observed in the best examples of the fifteenth and sixteenth centuries. The lower tier is occupied by five subjects, the representation of each filling two panels, thus:—1. *Agriculture*: (1) The Shepherd tending his Flock and the Ploughman his Plough, and (2) A Harvest Scene. 2. *Industry*: (1) Women Spinning, &c., and (2) Bleaching Cloth. 3. *Trades*: (1) A Blacksmith and a Goldsmith at Work, (2) A Mason and a Builder. 4. *The Institutions* in which his Royal Highness took so great an interest: (1) Education, (2) Orphanage. 5. *Commerce*: (1) Ships Loading and unloading, (2) Merchants on 'Change. The upper row contains representations of (1) music, poetry, and history; (2) peace, purity, religion, and home prosperity; (3) architecture, painting, and sculpture; (4) science and the learned bodies. In the centre of these is a figure of the Prince, seated in an attitude of meditation, book in hand; in the background are two figures unveiling the first Crystal Palace or Exhibition of 1851, an event which exercised so much influence on arts and commerce.

◆

STATUES, MEMORIALS, ETC.

MONUMENT TO THE LATE ROBERT SCOTT LAUDER, R.S.A.—During last week, the monument to Robert Scott Lauder, R.S.A., subscribed by the art students who attended his classes in the Trustees' Academy and National Gallery, has been erected in the Warriston Cemetery, and was inaugurated on Saturday, before the subscribers and Dr. Lauder, son of the late R. Scott Lauder, as representative of the family. The monument consists of a handsome monolith of grey Sicilian marble, containing an alto-relievo head of Scott Lauder in white marble medallion, with a block of grey marble underneath, set upon a basement of freestone. The design and execution was entrusted to Mr. John Hutchison, R.S.A.

MONUMENT TO A WELSH BARD.—Progress is being made by Mr. A. H. James, sculptor, of Newport, with the monument to be erected at Groeswen, near Caerphilly, by public subscription, to the memory of Caledfryn, who, during his life, was one of the most popular bards of Wales.

THE WELLINGTON MONUMENT IN S. PAUL'S.—In his inaugural address to the Architectural Association on Friday evening last, the President, Mr. T. H. Watson, A.R.I.B.A., made a brief reference to the Wellington monument now in course of erection in S. Paul's Cathedral, which he said is worthy of much attention for the beauty of its workmanship and its sumptuous decoration. If the general style of the design may be questioned (continued the speaker), there can be little doubt but that it far excels anything of the sort that has been done in modern times, and it is to be hoped, for the sake of art, that its completion may not be long delayed. The delay which has done so much to spoil the *eclat* of this magnificent monument must rather be ascribed to the over-anxiety of the artist to produce a work of extreme excellence for a very incommensurate price, which can only have been named for it in complete ignorance of the value of the thing proposed to be given.

◆

LEGAL INTELLIGENCE.

BREACHES OF THE HULL LOCAL BOARD OF HEALTH'S BUILDING REGULATIONS.—At the Hull Police Court, recently, several persons were summoned before Mr. Travis, the stipendiary magistrate, for breaches of the Hull Local Board of Health's building regulations. Among the cases was that of Messrs. Topham & Spink, grocers, Anlaby-road, who were summoned for contravening the Board's building regulations in the building of some property at the corner of Coltman-street, Anlaby-road. Mr. C. S. Todd (the Board's law clerk) prosecuted, and Mr. T. P. Thompson was for the defendants.—In opening the case, Mr. Todd stated the information was laid under the Kingston-upon-Hull Improvement Act, 1854, 17th and 18th Vic., cap. 101, the defendants' buildings at the corner of Coltman-street being erected contrary to the provisions of the said Act. The 53rd section of the Public Health Act, 1848, enacted that 14 days at least prior to beginning to dig or lay out the foundations of any house, the person intending to build should give to the Local Board a written notice, and certain particulars, as to such work; and it should not be lawful to build any such house until such particulars had been approved by the Local Board; and in default of such notice, or if any house be built without such approval, or in any respect contrary to the provisions of the Public Health Act, the defendants should be liable to a penalty of not exceeding £50, and the Board might, if it saw fit, cause such house to be pulled down. Again the 101st sec. of the local Act enacted that in addition to these particulars there should be furnished to the Local Board a correct plan, or plans, of such proposed building, drawn to a certain scale, and such plans should not be carried into execution, nor the building commenced, until the plan be approved by the Board. The 99th sec. of the Act enacted that every house, &c., should have a back yard or open space at the back of it, of not less than 8ft., and the 28th sec. of the Local Act, 1858, Amendment Act, 1861, prohibited any house or building forming part of any street, or any part of such house, being built beyond the front wall of any house or building on either side thereof, and prohibited the building of any addition thereto beyond the front of such building on either side of the same, as aforesaid. The 103rd sec. of the Local Act enacted that if any building be made or suffered to continue contrary to any provisions of the Local Board, every person offending should forfeit £5, and 10s. per day until such building be removed. Mr. J. Fox Sharp, C.E., the surveyor to the Board, and Mr. W. H. Wellsted, inspector of buildings to the Board, having given evidence to the effect that these conditions had not been complied with, the magistrate found the defendants guilty, and was about to inflict a fine of 20s. and costs, and 10s. a day for continuance, when Mr. Thompson stated that it was his intention to ask for a case. Mr. Travis said he should be happy to give every facility for reviewing his opinion on the matter, and respited judgment.

FURNIVAL V. PYBUS.—In this case, tried in the Doncaster County-court on Thursday week, the plaintiff, Mr. John Furnival, of Doncaster, sought to recover from the defendants, Messrs. Silas & Alfred Pybus, also of Doncaster, the sum of £48 1s. 7½d., balance of a builder's bill. Mr. Palmer appeared for the plaintiff, and Mr. Wheelhouse, barrister, of Leeds, for the defendants. Plaintiff agreed to build a house for the defendants, but after he had got part of the work done, the defendants decided to have two tenements instead of one. He went on building the two houses until stopped by the Board of Health. Afterwards, however, the altered plans were passed. Subsequently defendants discharged him from the work, and he then had the work he had done measured. He now sued for the difference of the amount of valuation and the money he had received. In reply to Mr. Wheelhouse, plaintiff said he had agreed to find all the woodwork, but he objected to carry out this contract after the Board of Health altered the plans. There was, however, no other specification drawn up. He proceeded to do the work as fast as he could after the Board of Health had passed the plans, except some four or five days, when he stopped, in consequence of the defendants not paying an instalment, in accordance with the agreement. After the 1st of August, the day he was discharged, the defendants had engaged other men to carry out the work, and he did not object. In reply to the judge, plaintiff said in building two houses instead of one he would have to find two doors, two windows, and two floors instead of one. The specification was for a definite sum, £100.—The defence was that the work was not done in a satisfactory manner, nor in the time it was agreed that it should be; and that the plaintiff had already received as much pay as his work was worth. His Honour (R. Wildman, Esq.) gave a verdict for the full amount claimed, with costs.

Settlement of the Sefton Park Dispute.—Campbell v. Hornblower.—Hornblower v Campbell.—It will be remembered that these actions were entered for trial at the Liverpool assizes in March last, but were withdrawn on being referred to Mr. Gully, barrister. The first action was brought by Mr. Campbell, the contractor for Sefton Park works, against Mr. Hornblower, the architect appointed by the corporation to superintend their execution, to recover the sum of £100 lent by Mr. Campbell to Mr. Hornblower during the progress of the work. Mr. Hornblower denied ever having borrowed any money from Mr. Campbell, and brought an action for libel against him by saying he had done so. The arbitrator has recently made his award, and in the first action he has ordered Mr. Hornblower to repay the £100 borrowed by him, with all the costs of the action; and in the second action he has declared that Mr. Campbell was justified in saying that Mr. Hornblower had borrowed money from him, and has ordered Mr. Hornblower to pay all the costs of that action and the reference.

The Chancel Gates of S. Mary's Church, Taunton.—On Tuesday week judgment was given in this case at the Consistorial Court at Wells by the Rev. Dr. Wallis, and was as follows:—"The application in this case is for a faculty to erect and set up, between the chancel and nave of the parish church of S. Mary Magdelene, in Taunton, two gates framed of iron and ornamented with brass, between the north and south portions of the chancel screen. The objections alleged seem to resolve themselves into this—that such gates are intended to effect an exclusion, either actual or symbolical, of the laity from the chancel, an exclusion which, of course, could not be legally justified. The Court considers that it will be obviating this objection, and at the same time effecting the legitimate purpose of the application, by decreeing, as it now does, that the gates be erected as an architectural ornament on condition only that no bolt, bar, lock, or other fastening shall be attached to them by which to fasten them, to the exclusion of any person at any time, if closed; and that during the time of divine service they shall always be kept open." The gates in question have since been re-erected in accordance with this judgment.

The Lundy Granite Company.—On Saturday, in the Rolls Court, Mr. Swanston, Q.C., made an application on behalf of the official liquidator of the Lundy Granite Company for directions as to the manner in which he should act under certain difficulties which had arisen. The learned gentleman stated that the company was formed in 1863 for the purpose of working granite on Lundy Island. The property of the company consisted of a lease from Mr. Heaven, the owner of the island, it being transferred in the name of Mr. M'Kenna, brother of Sir Joseph M'Kenna. The question now was what must be done with the leasehold interest of the company in the property. The official liquidator had been dealing with it, but the parties alleged to have an interest were not satisfied with the manner in which matters stood. While a Mr. Bentall had purchased the stock, Mr. M'Kenna had agreed to assign, but was now unwilling to do so except on certain terms, which the official liquidator could not acquiesce in. Further, Mr. Heaven was not willing to assign the lease to Mr. Bentall. Lord Romilly said he would not allow the company to pay more, and if Mr. M'Kenna did not assign to Mr. Bentall he must take the consequences of any proceedings which the latter gentleman might institute against him.

Our Office Table.

The Metropolitan Board of Works.—It has been arranged that the election of a successor to Sir John Thwaites in the chairmanship of the Metropolitan Board of Works shall be held on Friday next, the 18th inst., and that it shall be conducted in the same manner as before. It is understood that among members of the Board, Mr. P. H. Le Breton, Mr. Runtz, Mr. Freeman, and Mr. Westerton, are candidates, with, probably, many others. No names of outside candidates are publicly announced. Candidates may be nominated on the day appointed for the election, so that in all probability there will be a long list of candidates for members of the Board to select from.

Indian Antiquities.—Mr. J. Burgess, the editor of two magnificent albums of architectural remains, chiefly of the temples of the Jainas, or Shrawaks, at Palitana and Girnar, has submitted to the Bombay Government an elaborate report suggesting plans for a thorough survey of the architectural and archæological remains throughout the whole of the central area of India. His plans contemplate also the systematic collection of facsimile transcripts of all the ancient inscriptions, and, as far as possible, of ancient coins. The lists of remains appended to the memorandum enumerate upwards of 800 temples and other antiquities, of many of which the compiler has obtained information only through the natives of the different provinces regarding which he reports, and his lists are the first to notify their existence.

Annual International Exhibitions.—Her Majesty's Commissioners for the Exhibition of 1851 notify that an act intituled "The Protection of Inventions Act, 1870," 33-34 Vic., cap. 27, has been passed for the protection, amongst other things, of the exhibitors at the Annual International Exhibitions, and contains provisions similar in character to those which were effectual for the protection of inventors at the Exhibition of 1862, in pursuance of "The Protection of Inventions and Designs Amendment Act, 1862."

Arbitration in Bath.—We are now, we hope, getting into a rational way of settling trade disputes. The carpenters and joiners of Bath recently asked for the Saturday half-holiday and an advance of a farthing per hour in their wages. The matter was referred to an Arbitration Committee composed of both employers and employed, but no agreement could be arrived at. An appeal was then made, by consent of both parties, to Mr. Saunders, the Recorder of Bath, and that gentleman has given a decision in favour of the men. This, of course, will be submitted to by the masters. Under the old system there would probably have been a strike, disastrous to all concerned.

Sudden Death.—On Friday night last Mr. Bedford held an inquest at the Vestry Hall of S. Martin's-in-the-Fields, on the body of Mr. William Adolphus Carter, aged thirty-three, architect, 20, John-street, Adelphi, who was found dead on Wednesday morning. Mr. Charles S. Watkins, surgeon, King William street, Strand, said he was called to deceased on Wednesday morning, and found him dead. Deceased had been dead a great many hours. He examined the room to see if any bottles were lying about, but found none. On making a post-mortem examination he found the brain congested, and at the base of the skull an extravasation of blood. The vessels of the brain had broken and produced sanguinary apoplexy, which was the result of prolonged over study. The jury recorded a verdict in accordance with the evidence.

S. Paul's Cathedral.—At a meeting of the executive committee of the S. Paul's Completion Fund, held last week, Mr. Joshua W. Butterworth, F.S.A., handed in a communication he had received from Messrs. Powell, of Whitefriars, containing an offer to execute, free of expense to the committee, and as their contribution to the decoration of the cathedral now under consideration, a portion of panel-work of the wall beneath the Cotton memorial window, just put up in the south-east aisle. The decoration proposed to be used by them may be styled opaque glass fresco, or mosaic, and is very suitable for the representation of figures, draperies, and accessories on the internal walls of public, and indeed private buildings; the enamel shading being burnt in, the work becomes perfectly indestructible, as is ordinary glass mosaic; whilst for works to be seen near the eye, and not beyond life-size, the effect is calculated to be even much more effective than mosaic. The art which Messrs. Powell are introducing they have discovered is, after all, merely the unconscious revival by them of an art so early as the third century, a work of that date having been found to be in perfect existence in the palace of Prince Drago (formerly the Palazzo Albani) at Rome, at the present time. These mosaics formed part of the decorations of a hall in the palace of the Licurian family, which hall was afterwards converted into a church, known as S. Andrea, in Cantabarbara, and was pulled down in the seventeenth century. These mosaics are composed not of tesseræ, but of pieces of glass and marble cut into such forms as to fit them to form parts of the design in the same manner as wood is cut in making what the Italians call tarsia, and the French marqueterie. A careful drawing of this remarkable and unique specimen of third century ancient art in glass decoration has been made by Mr. Alexander Nesbitt, F.S.A., and deposited by him at the rooms of the Society of Antiquaries of London at Somerset House. The offer of Messrs. Powell was unanimously accepted by the committee, and on the motion of Messrs. Butterworth and Beresford Hope, the Dean was requested to thank those gentlemen in the name of the committee for their liberal donation.

MEETINGS FOR THE ENSUING WEEK.

Monday.—*Institution of Surveyors.*—Opening meeting, and address by the President, Mr. R. Hall. 8 p.m.

Tuesday.—*Institution of Civil Engineers.*—"On the Water Supply of the Town of Paisley," by Mr. Alexander Leslie, A.I.C.E. 8 p.m.

Wednesday.—*Society of Arts.*—Opening Address, by Lord Henry G. Lennox, M.P. 8 p.m.

Friday.—*Architectural Association.*—"On the Use of Colour in Diagrams illustrating the History of Architecture," by Edmund Sharpe, Esq., F.R.I.B.A. 7.30 p.m.

Chips.

The first ordinary general meeting of the Institution of Surveyors for the session will be held on Monday, November 14, 1870, when the president, Mr. Richard Hall, will open the session with an address.

A company is in course of formation, having for its object the purchase of the West-square Buildings, West-street, Dorking, as a site for a new town-hall.

The work in connection with the enlargement of S. John's Church, Bathwick, will, it is anticipated, be completed before the close of the year.

The Royal Commission appointed to inquire into the state of the law affecting Friendly and Building Societies consists of Sir Stafford Northcote, M.P., Sir M. Hicks Beach, M.P., Sir S. H. Waterlow, Mr. Bonham Carter, M.P., Mr. C. S. Roundell, Mr. F. T. Bircham, Mr. E. M. Richards, M.P., and Mr. W. P. Pattison.

The Marquis of Ailesbury has given directions to Mr. Bolam, his steward, to erect a number of improved cottages for the labourers engaged on his lordship's estate at Savernake, Wilts, and to pull down the old and dilapidated dwellings hitherto in use.

A new organ has just been placed in the parish church of Nafferton, near Hull. The instrument has been built by Meacock, of Doncaster, and the outer case was designed and decorated by Mr. Hawley, of the same town.

LATEST PRICES OF MATERIALS USED IN CONSTRUCTION.

Timber.

Teak ....load	£12	10	13	10
Quebec, red pine	3	15	4	15
,, yellow pine..	4	0	4	10
St. John N.B. yellow	0	0	0	0
Quebec Oak, white..	6	5	6	10
,, birch........	3	15	5	0
,, elm	4	5	5	5
Dantzic oak	5	5	6	15
,, fir	2	12	4	10
Memel fir	2	15	4	0
Riga..................	3	3	3	7
Swedish	2	7	2	18
Masts, Quebec red pine	4	0	5	5
,, yellow pine..	4	0	5	5
Lathwood, Dantzic, fm	3	0	5	0
,, St. Petersburg	4	0	6	0
Deals, pr C., 12 ft. by 3 by 9 in.,				
Quebec, white spruce	12	0	17	0
St. John, whitespruce	12	0	14	0
Yellow pine, per reduced C.				
Canada, 1st quality.	18	0	19	10
2nd do......	12	15	13	10
Archangel, yellow ..	11	10	12	10
St. Petersburg, yel...	12	0	13	0
Finland	£7	0	£8	0
Memel..............	0	0	0	0
Gothenburg, yellow	8	10	10	10
,, white	8	0	8	10
Gefle, yellow........	10	10	12	10
Soderham	8	10	12	0
Christiania, per C., 12 ft. by 3 by 9 in. yellow	10	0	12	10
Flooring boards, per sq. of 1in., first yel	7	6	10	6
First white........	7	0	9	6
Second qualities	6	0	7	0
Pumice Stone pr ton	6	0	8	0
Oils, &c.				
Seal, pale....per tun	35	10	0	0
Sperm body	78	0	79	0
Cod	37	0	0	0
Whale, Sth. Sea, pale	35	0	0	0
Olive, Gallipoli......	47	15	43	0
Cocoanut, Cochin, ton	43	10	0	0
Palm, fine	39	10	40	0
Linseed	29	15	0	0
Rapeseed, Eng. pale..	45	0	0	0
Cottonseed..........	28	10	34	10

Metals.

Lead —

Pig, Foreign	per ton	£17	10	0	£0	0	0
,, English W.B.	do	20	0	0	20	5	0
,, Lead Co.	do	19	15	0	20	0	0
,, Other brands	do	18	0	0	18	5	0
Sheet Milled....................	do	19	15	0	20	0	0
Shot, Patent	do	21	0	0	21	0	0
Red or Minium	do	19	15	0	20	10	0
Litharge, W.B.	do	0	0	0	0	0	0
White Dry	do	27	0	0	0	0	0
,, ground in oil	do	0	0	0	0	0	0

Copper :—

British—Cake and Ingot	per ton	£67	0	0	67	10	0
Best Selected	do	68	0	0	69	0	0
Sheet	do	72	0	0	73	0	0
Bottoms	do	75	0	0	0	0	0
Australian	do	68	0	0	71	0	0
Spanish Cake	do	0	0	0	0	0	0
Chili Bars, cash	do	63	10	0	64	10	0
,, Refined ingot..............	do	66	0	0	69	0	0
Yellow Metal	per lb	0	0	6¼	0	0	7

Iron :—

Pig in Scotland, cash..............	per ton	£2	11	5½	0	0	0
Welsh Bar, in London	do	7	2	6	7	10	0
,, Wales..............	do	6	10	0	6	12	6
Staffordshire....................	do	7	10	0	8	0	0
Rail, in, Wales	do	7	0	0	7	10	0
Sheets, single in London..........	do	9	10	0	10	5	0
Hoops, first quality	do	8	10	0	9	5	0
Nail Rod	do	7	5	0	7	15	0
Swedish	do	9	10	0	9	15	

THE BUILDING NEWS.

LONDON, FRIDAY, NOVEMBER 18, 1870.

THE MEDIÆVAL STYLES OF SOUTHERN ITALY.*

TO say what a book contains is sometimes more useful than to criticise it. If it happens to be one which is comparatively unknown, this is especially a serviceable method. Supposing there is anything to be extracted from it at all, most readers would rather know what can be so extracted than what the reviewer happens to think of the book as a whole. Now there is a small group of architectural works, familiar enough, doubtless, to a limited class, but new to a much larger one, which seem to deserve this sort of analysis; and amongst the chief of them is that of which the title appears below. It relates to the Middle Age architecture of Southern Italy. The places referred to—Bari, Mola, Trani, Bitetto, Bitonto, Troja, Molfetta, and others—lie for the most part within two degrees south of Rome, and, of course, from the slope of the Peninsula, greatly to the east of it. Several of them are on the shore of the Adriatic, and most of them nearer to that coast than to the opposite one. It is a region to which few architectural works refer—an out-of-the-way corner which travellers in our profession seldom seem to visit. And truly, in comparison with Northern Italy, it has little to tempt them. Its art is not great or perfect by any means, though it is interesting, and in some points suggestive. Many of its buildings have a certain quaintness and rudeness about them, such as in England we associate with a heavy round-arched style; and yet most of them, even when round-arched, are of a light and slender type. There may be traced in many of them—faintly in some cases, distinctly in others—the influence of that lightest and slenderest of styles, the Saracenic. Apart from all other circumstances, this by itself would be enough to give them interest. The joint products of Eastern and European mediæval art, as they exist in Spain, in Sicily, and here in Southern Italy, well deserve to have a work specially devoted to them. Architectural hybrids, indeed, like living ones, are as a rule, more curious than useful. But, unlike them, their race does not always die out with the individuals which began it. It results at times in a new species, or at least in a permanent and strongly marked variety. And it is perhaps most capable of doing so when it springs from two styles, not contradictory like Gothic and Classic, but nearly allied, like Gothic and Saracenic. Be this, however, as it may, the subject is worthy of attention for its own sake, as well as for the beauty of some of the works with which it must deal. In these works the flat ornament is especially admirable. As far as geometric form could do the Eastern builders had of themselves brought it almost to perfection. But, for religious or other reasons, they had rigidly avoided any approach to the imitation of nature. Their work was a well-arranged skeleton; like the bare branches and twigs of a tree in winter, it wanted nothing but leaves to clothe it. And these, in some of the mixed examples, the European designers gave. They joined their own ornament, derived from nature, to the beautiful artificial patterns of the Oriental, and the branches burst at once into leaf and flower. Leaving figure sculpture and mosaics out of the question, more exquisite surface decoration can rarely be found than some of that, especially in Spain, which arose from the mutual influence of these two styles.

This mingling, then, in certain examples, of the Saracenic with the Romanesque, or Early Gothic spirit, is one of the noteworthy things in these churches of Southern Italy. But they have many other peculiarities, and some more universal amongst them than this one. These peculiarities will, perhaps, be best understood from a description of two or three examples. Bari Cathedral, then, with which Schulz's work opens, is in a round-arched style, presenting many features of the Pisan Romanesque. It has a nave, the side aisles of which alone are vaulted, wide transepts, and a semicircular apse. Over the crossing is a low octagonal tower, which, as it is almost destitute of windows, can hardly be called a lantern. To the east of the transepts are two tall and somewhat slender square towers, not placed in the re-entering angle between the apse and transepts, like the turrets of the Apostles' Church at Cologne, but set almost as wide apart as the transept ends. The same thing occurs at Molfetta and elsewhere. Instead of showing the semicircular apse externally they conceal it by a straight screen-wall, flanked by the two towers just noticed. They make the east end, in fact, into something very much like an ordinary west front; and the absence of doorways is at first sight the only thing to distinguish it by. Amongst the details, the gable copings at Bari Cathedral catch the eye at once. They do not stop at the bottom of the slope, like our English ones: they run down the upright wall from the nave roof to that of the aisles, and from this again some feet lower; and this is characteristic of the style. In the arcading, the ground arches have a curious look. On a casual inspection, their outer lines might almost pass for semi-ellipses, with the longer axis vertical. In reality, both outer and inner lines are semicircles, but the former are stilted more than the latter, so as to make the voussoirs longest at the crown. The singular effect which this produces in an arch of several recessed orders can hardly be realised without a drawing. The octagonal tower is singular, and shows something like a trace of Saracenic influence.

S. Niccolo, Bari, is also a round-arched building. Like the cathedral, it has a nave with aisles, transepts without, and a semicircular apse. This apse, as in many basilicas and eastern churches, is rather narrower than the central avenue of the nave, which, by the way, is nearly 40ft. wide. And this church has another basilican feature in the two large piers carrying transverse arches (as at San Mimato and elsewhere) and thus dividing the nave into two sections of three bays each. The side aisles are about half as wide as the middle one, and beyond them are chapels in the intervals of the piers. Of minor details, the most conspicuous is the great west doorway. As usual, it has rich scrollwork on its sides and lintel, numerous shafts in its jambs, and outside of them two large columns projecting in front of the wall and resting on the backs of sculptured animals. A great doorway of this kind is often the principal feature in the front of a South Italian church. Sometimes an elaborate circular window takes precedence of it; but the other windows, as a rule, are plain and unobtrusive. S. Gregorio, at Bari, in many respects resembles S. Niccolo. Its nave arcade, six bays long, is divided into two sections by a massive pier in the middle, but there is no transverse arch. The side aisles, as well as the central one, have apsidal east-ends, an arrangement more common in Byzantine than in Romanesque work. Molfetta Cathedral differs in construction from the churches we have noticed. It is indeed a round-arched building, and resembles Bari Cathedral in its square east front with flanking towers. But its nave, instead of being roofed with wood, is domed. It is three bays long; its side aisles are less than half as wide as its central one, and the latter is spanned by semicircular arches from pier to pier. On these arches rest the domes, all differing in height. The eastern dome is the lowest, and the central one the highest of the three, and is moreover, pointed in section, which the others are not. Externally it is cased in an octagonal tower, with a corresponding roof of somewhat low pitch.

Looking at this group of churches generally, they present a well-marked and distinctive character which it is difficult to describe. Most of them include such forms as we always associate with Romanesque, and yet they work these into a light and slender type, such as in Northern Europe we seldom find apart from the perfectly-developed Gothic. They have refined and lovely sculptured ornament, joined to an architecture not seldom coarse and overloaded. The first impression which some of them produce is that of barbaric magnificence. They seem to aim at being grand, and only end in being gaudy. And yet when one looks into this detail, which tends to satiate by its profusion, there is nothing barbaric there. Whatever the general result may be, each particular part is often admirable. The stone-carver, in short, was in advance of the architect; and it is in the minor points and not the general design that there is most to admire. The cathedral of Troja will illustrate our meaning. It has a front of low proportions, with a wheel-window much too big for it, with coloured ornament, and sculptured blocks built in here and there, it is hard to say why. It is a design that can only be called astonishing; it destroys all power of judgment for a time by its very oddity. And yet on coming closer it is not only full of interest but of beauty. Its architecture lacks reserve and balance — lacks strength, and dignity, and refinement; and yet, strangely enough, these are the very points in which its ornamental sculpture excels. As a west elevation it is almost valueless to us; as a museum of details it is a treasure. And so it is in many of these examples. Fortunately the detail-drawings are numerous and good. They include a magnificent pulpit in the Cathedral of Sessa—a number of bronze gates ranging from Saracenic to Early Renaissance—various specimens of the characteristic scrollwork from the doorways—grotesques, mosaics, marble inlays and perforations, and figure-sculpture. The work contains numerous and suggestive plans, some fair though not first-rate architecture, and a large amount of ornament, parts of which are not at all inferior to the best conventional art that can anywhere be found.

---

[*] "Denkmaeler der Kunst des Mittelalters in Unter-Italien." Von H. W. SCHULZ. 1860.

THE LOAN EXHIBITION OF PAINTINGS IN WATER-COLOURS.

GALLERY OF THE INSTITUTE, PALL MALL.

THE late Mr. Pugin used to relate that while, on one of his Continental trips, he was diligently taking notes of the relics of mediæval ornament on the walls of cathedrals, the altars and shrines, the sacred utensils and vestments, he was accosted by a stranger who importuned him to visit a collection he had spent some years in forming. "A collection of what?" said our impatient friend. "A collection of buttons." Pugin, astonished, as he well might be, declared he had no leisure to spend on such trifles. Again and again, however, the invitation was urged upon him, and at length he rather doggedly consented. "Fancy my astonishment," said he, "when I found a most interesting and exhaustive collection—showing the art that had been lavished on these apparent trifles in all ages; from the classic fibulæ to the choice enamels and costly mounts of such objects in the latter times of the French monarchy." Now when we heard that this loan collection of water-colour paintings comprised works of the early masters of our National School, we hoped—the practice of the art being as yet hardly a century old—to find it as complete and exhaustive as the above-named collection of buttons. In this we were disappointed, but not in the rare beauty and excellence of some of the by gone masters who do find a place in the Gallery.

Water-colour painting can hardly be said to have existed as an art prior to 1780, but between that time and the foundation of the "Society of Painters in Water-Colours" in 1805, works of rare excellence were produced by Sandby, Cozens, and Girtin, none of whom are represented in the present collection, nor are such distinguished members of the Society and followers of the art in its early days as Cristall, Glover, Francia, Stevens, Havell, Delamotte, John Chalon, Frederick Nash, the eldest Pugin, and many others who are represented in the historical collection at South Kensington. Still there are in the exhibition very fine works of the best artists of what may be called the middle period of the school, mixed with others by the best living artists. Thus we are able to compare the art as it was practised 20 or 30 years ago by such painters as Robson, De Wint, D. Cox, Copley Fielding, Prout, Hunt, and Cattermole, with the art of to-day, and to mark its progress, its change, or its decline.

If we search for the principles on which these men worked, it certainly was not that of literal imitation or individuality of parts, but of the consideration of the picture as a work of art as a whole. The pictures of some of our living artists who are the greatest favourites with the public are but an aggregation of imitative details, true as parts, but not as a whole. Those of the older painters of the school whose works will live commenced with the conception of the picture as a whole, and worked throughout in that spirit. They endeavoured to embody a sentiment, or an effect of nature, and sacrificed individual truths to realise to us the larger truth of the sentiment or expression sought. Take David Cox as an example, who is represented in this exhibition by above twenty works of great excellence, one and all painted on this principle. He ever seeks to give us the breezy freshness of nature, the sense of moving air in storm or shower. He cares less for sunshine in his pictures than rolling clouds or wind-moved air; this is the motive of his foliage. Though we find his foreground rich with herbage bending and fluttering in the summer wind, it is not so painted that we can distinguish the rush or the burdock that grow on the margin of the stream, but that we may have a full impression of the wealth of weedage the waters nourish, and their motion in the summer wind. That he commenced his pictures with full consideration of the whole is seen in a noble sketch, No. 160, "The Storm," the property of Mr. Topham. Examine it well—the painter's mind dwells not for an instant on rocks or trees as rocks or trees, but his mind is full of the mingling of earth and cloud, of air and water, in the mountain storm. Splash after splash are laid on with this large view, with none of the littleness of imitative exactness. We have called it a sketch, for the picture has in some sense been left incomplete, because the painter feared to render it less complete if he carried it farther, and to lose what he had already so largely realised. Cox has been called the Constable of water-colour art; the men were alike in their feeling for nature, and alike in their mode of procedure. Constable, after laying-on a picture in this large and broad manner, often put it aside and recommenced his work on another canvas, to carry it beyond the first if he could, but fearing lest the execution should overlay the feeling. If we continue our examination of Cox's other works in the gallery—from the characteristic picture of "Ulverstone Sands," No. 45, where the sea-breeze almost lifts the figures from their legs, or the gentler pastoral of "Changing Pasture," No. 28, to those eight small but perfect pictures in frames 60 and 61—we shall find the same principle of sacrificing the details to the larger truth of the general effect.

If we turn from Cox to Robson we find the same largeness of view—the same suppression of imitative details. Look at No. 32, "Ely;" the noble Cathedral towers in calm dignity above the surrounding flats, telling against the unclouded sky, it looks, as it must for ages have looked, a place of refuge and hope to the surrounding land. No. 96, "Nant Francon," is not so fine a work, and cannot compare with the grand mountain tarn, by the same painter, at South Kensington; in fact, it is rather faded, and its colour assimilates too much to the surrounding frame. In its present state it would be improved by a white mount. The De Wints in this collection have still greater claims on our attention as true lessons in art. There are a dozen works by this master, which for richness of colour, tone, and freshness are quite unrivalled. Passing the long silvery pictures, Nos. 10 and 17, let us pause before No. 52, by the same painter. What a serene and beautiful treatment of a storm passing away on "The Thames"! The clouds have left a golden lining towards the sun; the picture is suffused with that wondrous glow that succeeds after the grey blue clouds have become the background; a rainbow crosses these dark clouds; the water, still and without a ripple, reflects the golden clouds; the weeds no longer bend to storm-gusts, and the whole picture impresses us with a feeling of solemn calm.

We cannot dwell on the other pictures by this artist, but they will well repay the most careful examination, especially those belonging to Mr. Henderson; we may note, however, that the brilliancy of the works of this period is independent of the use of white. In Redgrave's "Century of Painters," almost the only source from which the early history of the art and its professors is to be found, a story is told showing the great objection Turner had to the use of white pigment in water-colours. This objection seems to have been shared by the painters to whose works we have called attention. During the last 20 years the use of white and other body colours has greatly extended, as we think somewhat, to the deterioration of the art; there can be no doubt that the use of body colours gives great facility to what is called finish, that, is to the multiplication of details as opposed to breadth and general truth. Let any one examine No. 82, "Feeding the Ducks," by Birket Foster, where the leaves of the willows on the margin of the pond, made out in body colour, may be counted leaf by leaf; and then turn to No. 72, by Copley Fielding or No. 95, by David Cox, which hang at no great distance to the right and left. Comparing them with No. 82, he will feel that the innumerable details of this imitative foliage are pretty perhaps, but mean and little compared with the grander treatment of the older works, wherein, if you cannot decide whether the trees are oak or chestnut, elm or lime, or recognise the weedy vegetation of the foregrounds, the gloomy grandeur of the mountain range in the one, or the golden glow of the other, are certainly more painter-like if less imitatively exact.

We must not, however, be supposed wholly to object to the use of body colours; judiciously used they may add to the richness of the work by giving texture, distance, or air-tints, and in the hands of some of our living painters give results that, if different from the pictures of the older men, have a novelty and charm of their own. So far we have endeavoured to compare principles rather than to describe pictures, and have left ourselves little space to remark on the numerous and romantic compositions of George Cattermole, the rich and numerous works of W. Hunt, and have almost neglected the pictures of our living painters; yet many of these are of rare excellence. Such pictures as "Curfew Time," No. 156, by Saml. Palmer, are as perfect as the work of the poet himself; glowing and rich, the eye rests on it with intense satisfaction. Boyce, Lundgren, Goodall, Gilbert, and many others are well represented, and the thought seems a good one that enables us, through the kindness of the possessors of fine works of art, to combine extreme pleasure with aid to a valuable charity. We have left out the consideration of the pictures by Turner in this collection; as the father of water-colour art, the study of his works requires more space than we can afford, but we earnestly recommend all lovers of art to pay an early visit to the gallery, to enjoy them for themselves, and further to compare their peculiar excellences with the surrounding pictures.

◆

THE RESUSCITATION OF THE ARCHITECTURAL EXHIBITION AT THE ARCHITECTURAL MUSEUM.

A GOOD suggestion has been made—that the Architectural Exhibition having come to an untimely end, the Architectural Museum should, to a certain extent, supply its place; and we think this is a suggestion well worth the consideration of the profession. There is a large class of purely practical, and another of decorative drawings, which, while it is hopeless to endeavour to interest the public in them, are of the utmost value to architects and students. The loss of an annual opportunity to exhibit such for the purpose of comparison will be regretable; but, as the Academy is closed to them, and South Kensington would show them but cold favour, as not likely to be attractive to the multitude, the Architectural Museum is positively the only place which at present could give them shelter. We therefore heartily welcome the proposition that has been made, that an exhibition of purely practical professional drawing should be held for the future at the Museum. No additional rent, or even attendance, need be entailed by the experiment, and possibly a welcome, though small addition to its income, might be expected. It would also have another advantage, prospectively, perhaps, not a small one, and certainly one that ought not to be overlooked. We mean that it would tend towards that consolidation and uniting of the now too numerous and separate architectural societies, and would form another bond between the Museum, the Institute, and the Architectural Association such as the establishment of the Architectural Art Classes has already inaugurated. We happen to know that the above suggestion has not fallen like seed by the way-side, but has already engaged the attention of the energetic and active authorities of the Museum. It is, therefore, with hopeful anticipation that we look forward to the result of their deliberations. The various competition drawings of each year would, in themselves, form—as they have hitherto formed—an interesting and useful collection. The knowledge that they are likely so to be exhibited is a wholesome check to any gross unfairness on the part of competitors, and affords a means of testing the justice of the decisions that have been made; and architects and architectural students cannot but be gainers by a study of the various designs for the same object.

Those of our readers who know the new premises that have been built for the Architectural Museum will be aware that there is ample space for the erection of screens whereon to exhibit such drawings without its being necessary to displace any of the casts; and there soon will be more space, as by the alteration of the staircase now in progress that feature will no longer obtrude itself into the centre of the great hall, the whole of which will therefore be available for the purpose that we have pointed out. This alteration is being carried out, in default of funds on the part of the Museum, by the Committee of the Art Classes, to which we have referred. And this is another proof of the advantages that must accrue from the closer union of the several professional societies.

◆

SCIENTIFIC SOCIETIES' HOUSE.

ABOUT twenty months since (March 19, 1869) we suggested that a new building should be erected as a home for the scientific societies. Since then we are glad to learn that the idea has made substantial progress. An important and interesting meeting was held on the evening of the 15th inst. at the rooms of the Statistical Society, to hear a paper by Dr. Guy, in which he advocated the union of several of the scientific societies, with the view of erecting a building for their joint accommodation, and thus economising their establishments and number of meeting rooms, and bringing together their several libraries and museums, &c.

It appears that an influential movement for this purpose is on foot, and a committee has been formed for its consideration. Two separate schemes are now before this committee, and it is anticipated that others will be subjected to their deliberation. The only one that was brought before the meeting we have mentioned was that which Dr. Guy favours himself, and which has been put into some form by Mr. Bellamy, the architect.

Dr. Guy proposes that a strenuous application should be made to Government for assistance, at any rate so far as the grant of a site should be concerned. He very clearly and forcibly drew attention to the claims which the scientific societies have upon the public, and consequently upon the public purse, seeing that their efforts undoubtedly tend to the continually economising of public expenditure, by the invention of new and better modes of executing the necessary work of government and social needs. The site to which he particularly referred was that now only partially and indifferently occupied between Parliament-street and the Embankment, less than one-tenth portion of which would, he calculated, be amply sufficient for this better housing of the principal associations connected with science.

The lecturer gave, we thought, a somewhat back-handed blow in referring to art as compared with science, and held out no helping hand to any of the societies connected with artistic pursuits; but while we cannot agree with him as to their comparative inferiority to those whose merits he was enlarging upon, we think it well they should be dealt with entirely separately, and the devotees of art are quite capable of looking after their own interests. We may hereafter refer to the advisability of the combination of the professions of architecture, painting, and sculpture, for a similar purpose, but on the present occasion will confine our consideration to that proposed by Dr. Guy in relation to the scientific societies alone.

The particular scheme (as regards the building) advanced by that gentleman, in connection with Mr. Bellamy, was the appropriation of the banqueting hall of Inigo Jones at Whitehall (another chapel being built near, instead of continuing to apply that unconsecrated and unsuitable structure for the purpose), and building another duplicate of the hall further to the south, and connecting what would then be the two wings of a large public building with an appropriate centre, containing an entrance-hall reached by a flight of steps. We presume the duplicate block of building above named would be internally subdivided by floors and partitions, and not be another gutted structure with similar profusion of sham and useless windows. We heartily commend the general proposal of Dr. Guy, as regards the application for a site in the neighbourhood pointed out, and can only say we wish he and his friends may be fortunate enough to get it; or, should that be impossible, another equally or nearly equally good; and if the Government be unable to concede a site possibly needed for more important objects, they might assist in the purchase of one, seeing that acres lie unoccupied on either side of Victoria-street, which we should think quite suitable. For the particular scheme put forward we have less admiration. We hoped to have heard the last of Mr. Lowe's resuscitation of Inigo Jones's Whitehall Palace. With the highest regard for the portion as built, we should deeply regret its multiplication, partly for its own sake, as we believe its interest would only suffer subdivision by this scientific but highly unoriginal and inartistic treatment, and partly for the sake of the age, whose architectural ability would be but poorly represented by such copyism, if not parodying of the work of a bygone day; but principally and lastly because such a makeshift would prove a practical bungle, as the cramming into such a pre-determined rectangular external form of all the multitudinous and various internal requirements of the societies would be a sadly unscientific commencement for their united labours hereafter. Let the Doctor conceive, for one moment, Nature setting about her work in the same way, and given the external frame of even the Caucasian—the highest type of humanity —forthwith cramming and cramping into the same the organisms for all mortals from the pole to the equator, regardless whether they must hereafter live in the hut of an Esquimaux or camp in the open like the Hottentot. The notion is so thoroughly that of the modern Italian, as exhibited in the partitions and floors which play old Harry with the symmetrical outside of the New Foreign Office, that we long for the progress of the New Law Courts, to show the nineteenth-century mind how requirements should be studied, and buildings planned from within, instead of, conversely, from without, to the throttlement of all the vital health of the structure.

◆

ON TASTE IN ART.

IN considering the nature of "taste" in general it is before all things necessary to arrive at a clear understanding of the sense in which we use the word. According to some English writers, taste is mutable—there are no laws to govern it; and no clear definition can be arrived at as to what constitutes "good taste." It is a perception of that which is good, beautiful, and true. But according to Hume, "beauty is no quality in things themselves; it exists merely in the mind which contemplates them, and each mind perceives a different beauty; one mind perceives deformity where another is sensible of beauty, and every individual ought to acquiesce in his own sentiment without pretending to regulate those of others." Were this view accepted, no one could with justice complain of bad taste in another; for if beauty be not a thing to be comprehended, if it be in nowise tangible, if, in fact, it be merely a sentiment, varying in each individual mind, any such expression as a correct consciousness of the beautiful would be unmeaning. If the beauty of the productions of a Michael Angelo existed only in the minds of some, the individuals who admired them certainly could not complain of bad taste on the part of those who could see nothing in them but so many yards of canvas and pints of colour. In fact, the old saying, "you can't dispute about taste," would be borne out, and any attempt at removing errors would be of no value.

To these mistaken notions—to that sublime arrogance which enables the Manchester manufacturer to stand opposite a picture and give his opinion on it, though understanding nothing at all about it,—to the idea so prevalent amongst us at the present day, that each man has a right to his own taste, is, in great part, the unsatisfactory state of all branches of our art to be traced. Let us examine a moment the German and French meanings of the words *geschmack* and *gout*. According to the best German authorities, taste is the capability of distinguishing the beautiful and artistic from the ugly and inartistic. Inasmuch as this capability appertains to the feelings of mankind, it has been thought that great license should be permitted to individual fancy. But as the truly beautiful and artistic is subject to fixed and immutable laws, only that taste which is in harmony with such laws deserves the affix "correct." Taste must therefore not be left in a crude and uncultivated state, but its training and development should form one of the chief objects of education.

Victor Cousin says, in his "Philosophy of the Beautiful":—"The important element in taste is that pure love which is excited in the presence of beauty—a love which must be jealously distinguished from that selfish feeling which physical sensibility gives birth to, and incites us to appropriate the object of it. The love of the beautiful pursues simply an idea; its enjoyment is purely intellectual." This writer has entirely followed the German school of thinkers, in supporting the view that he who says "this is true," "this is beautiful," does not express a personal and changing sentiment, but a universal judgment and an objective law imposed on all men. "Standing before the Apollo Belvidere," he says, "I declare it to be beautiful. Am I not convinced that I do not utter a personal opinion, but the judgment of all the world?"

To say that the perceptive faculty of taste is a simple one, easily to be defined, would be unwarrantable. Many are the writers of known repute who have occupied themselves with this most important subject, and widely different are their views. As a general rule, however, English essayists have confined themselves to special forms of taste, either taking it as applied to the fine arts, or as relating to industry, without entering upon the subject from a general point of view; or they have overloaded their works with details on every branch, and then drawn no general conclusions whatever.

I shall attempt in this paper to define some general laws which govern taste, and endeavour to trace their origin. The Infinite Being has manifested Himself throughout the whole of creation; there is no existing thing which does not bear the mark of His Almighty hand. "In every aspect of nature, whether sublime or awful, tender or pleasing, He is illustrated and proclaimed." In matter, therefore, we profess to be able everywhere to trace the divine influence. Is not this also the case with the less tangible though all-important sphere of human intellect? But with intellect, as with matter, we must not lose sight of the fact that this Power did not form all things as they actually exist at present. Creation did not begin with the shapely gazelle and the lordly lion, the beautiful oak and the stately poplar. Matter is endowed with certain forces, and these forces are left to develope themselves according to certain immutable laws. To the student of physical geography in a universal sense, does not each succeeding age, from the antediluvian (guessed at by fossil remains) to our own, show us a clearly defined gradual development in vegetation, in animal life, and also in man? As this development in the vegetable and animal kingdoms is produced by the action of certain forces under laws, so also is the development of man an effect of the same causes. Into the forces affecting matter I do not intend to enter in this paper. The beautiful in matter is foreign to my present purpose. The forces affecting man, however, imperatively demand careful consideration; for if we can show that man's notions of the beautiful, good, and true are the effects of the gradual development of certain forces, shall we not obtain some grounds for asserting that taste, or his perception and appreciation of those notions, is an outgrowth of those very forces which produced the notions themselves? "The beautiful, the true and the good," says Daniel, "are ever entwined together, nor must they be separated from each other's embrace. The true and the good are expressed in the beautiful, which is beautiful because it encloses a moral idea."

According to the theory propounded by Dr G. G. Zerffi, and borne out by him in his lectures at the Science and Art Department, South Kensington, and elsewhere, there are two clear and distinct forces working in mankind—each separate from and different in its construction to the other, yet both equally necessary to the proper development of the human race. These are the intellectual and the moral forces—the former being boundless, having no limit, the other being clearly defined, fixed, and immutable—the one dynamic, the other static. Now civilisation consists in a correct balance of these two forces, and it is only amongst civilised nations that correct taste can exist. To say that the good and true are beautiful is to give utterance to a truism; therefore to affirm that the beautiful is good and true is equally trite. But how can men in whom the sense of the good and true is not properly developed appreciate the beautiful, if this is the case? Is Jones, who knows the good only as far as it is applied to excellent gin and water, and who is utterly ignorant of even the most microscopic glimmering of the true, to have a correct taste in the disposition of his household furniture and his own dress? The suggestion is absurd. But what is the cause of this lamentable want of taste in Jones? Simply want of education. But it may be urged—"Surely to attempt to teach a person taste, when that perceptive faculty is merely an individual emotion, to which every man has a right, just as he has to his own religion, would be useless." This argument, which it often used, appears to me especially weak. It is granted that beauty is good, but what is good is moral. Beauty is therefore moral. Moral laws are fixed and immutable; the same can be said of the laws of beauty. Taste is the appreciation of the laws of beauty, as religion should be the embodiment of moral laws. No greater license can be permitted in taste, therefore, than is granted in religion. Any man has a perfect right to hold any religious opinions, as long as he offends against no moral law. As this holds good of the individual, so also is it the case with nations. Those nations which have professed a religion which did not accord with the immutable moral laws—where are they? And of those nations whose taste was not in accordance with the laws of beauty, show me the art!

But we have another point to consider. The true is beautiful, consequently the beautiful is true. But truth is that which is the aim and purpose of the working of the intellectual force; it is therefore to be indentified with it. It is not absolutely fixed, because that which is true to-day may be false to-morrow. That which was the product of the onward striving of the intellect up to the present time, may, and doubless will, be surpassed in the future. It is as difficult to affirm that we may never again see artists greater than Michael Angelo, Raphael, Titian, and Leonardo da Vinci, as it is to say that Byron and Shakespeare have exhausted their respective branches in poetry. The beautiful must be an exact balance of the two forces, the good or moral and the true or intellectual. We can find nothing to admire in one of the wooden virgins, "hideous in sanctity," of former times, though the representation is highly moral, and we can as little conscientiously praise the vulgar or obscene portions of Byron or the licentious representations of a painter. A picture, to merit praise, must satisfy both the intellectual and the moral nature of the gazer—nothing must be wanting in either way.

I have endeavoured thus to show that taste is an outgrowth of a proper and full development of the two forces which work in humanity. The better and fuller such development in a nation the more refined will be its taste. Above all things, let us not imagine that taste is mere caprice—that it is based on no laws, and merely depends on the whim of the individual. Such is by no means the case. The laws governing taste are exact, because they depend entirely upon those of beauty, the real existence of which has been so often demonstrated. Only when this truth is thoroughly recognised by the general public can we hope for that long-desired day in which the painter, sculptor, poet, and author will be able to produce works meriting the epithet tasteful, without fear of having them left on their hands. And it is only then that a real improvement in our art can take place. Our duty is, therefore, plain. Let us, by striving to develope the capabilities of each human being—by educating him, in fact, in the right sense of the word "education"—endeavour to produce in his mind a correct understanding of the two forces working in humanity—a love of nature and a thorough appreciation of the beautiful, for all these are included in the one word "taste." Let us not lose sight of the words of Addison, and remember that "the taste is not to conform to the art, but the art to the taste." H. C. Z.

ON THE HISTORICAL DEVELOPMENT OF ORNAMENTAL ART.

THE sixth lecture on this subject was delivered on Tuesday afternoon last by Dr. G. G. Zerffi, in the Lecture Theatre of the South Kensington Museum. The lecturer commenced by saying that in pre-historic art the tendency of man to ornament first himself, and subsequently his dwellings, had already been traced. The nature of the implements used had also been dwelt upon, and it had been shown that, except in the case of the Mexicans, who were acquainted with the use of bronze, these had been uniformly made of stone. The pre-historic man went, however, farther than this. To protect himself he endeavoured to enclose himself in some secure dwelling. The snail and the tortoise were provided with houses by the Divine Power; the beaver was endowed with instinct which enabled him to construct an artificial hiding-place. The mole burrowed beneath the earth, and, raising a kind of tumulus, made himself a house. Man had been endowed with intellect to enable him to protect himself from the influences of the weather. At first he sought shelter in caves, and only by degrees came to construct independent enclosures. This was proved not merely by the words of ancient writers, but by the savages of our own times. The people of the Andaman Isles now live on the branches of trees, the people of New Caledonia in holes; and the aborigines of Australia avail themselves of the shelter of rocks or bushes. At first, then, man was contented with the protection afforded by Nature; a step in development had been made when he constructed artificial caves—not for the living only but for the dead. It was only gradually that man came to build houses for himself and temples for his gods, the construction of houses preceding the erection of temples. The people of Madagascar, for instance, kept herds, were agriculturists, had fairly constructed dwellings, and were acquainted in some degree with textile art. They had, however, not only no temples, but no groves for worship. Primitive man, in constructing his dwellings, not only sought protection from heat and cold, but from wild animals and his often still-more rapacious fellow-creatures; and this is the explanation of the origin of Lake Dwellings. The lake dwelling is the most ancient form of independent construction, and is mentioned by Herodotus. Lake dwellings might be divided into three principal groups: (1) pile dwellings, which were of the rudest construction; (2) fascine dwellings, better and more solidly constructed; and (3) *crannoges*, or wood islands, of which traces are found even during the Iron Age. The lecturer having described these classes of lake dwellings in detail, and pointed out the differences in their construction by means of diagrams, proceeded to enter upon Ancient Art. He said he would treat the art productions of the different nations in accordance with the four divisions he had already made in a former lecture—viz., textile art, ceramic art, tektonic and architecture, with the addition of sculpture and painting later on. As with the savages, so with the nations of history, ornamental art took its origin in weaving. At first the progress had been astonishing, but frequently, after a certain period, everything became fixed. A kind of petrifaction of patterns ensued, as is to be traced most clearly in the stationary forms of architecture, which, being based on the progress of textile art, became a sort of symbolic representation of a nation's development in art. This may be studied in the present day among the New Zealanders, whose architecture, such as it is, is a direct outgrowth of their textile art. The woven fence or hedge is the basis of all their constructions; their villages are fortified, entrenched, and provided with rows of fences arranged according to the best rules of fortification. The piles, especially those at the gates, are ornamented with coloured sculptures. On the cross beams, which form the most ornamental feature in their houses, an imitation of their tatooing is to be found. These people have not developed, owing to their isolation and strong disinclination for intercommunication with the civilised world. Their pottery is coarse, they being hardly acquainted with the use of burnt clay. Turning from New Zealand to Central Asia, the lecturer said he began to tread on historical ground. As far as reliable records went China had the oldest history. Chinese art, however, was so entirely home-sprung that it could be treated of at any point, and therefore it would be preferable to commence with that of the Chaldæans and Assyrians. In Central Asia the Aryan race was met with for the first time, and from this portion of the globe the lecturer said he should trace the gradual development of art to our own times. He should glance at China and Egypt, and consider to what extent the Turanians had contributed to the progress of humanity. Historians in general, and art historians in particular, had tried, at the end of the last and the beginning of the present century, to prove that Greece was the only country worthy to occupy the attention of the art-student. Greece had been looked upon as something absolute and perfect in itself. Entering, however, into a more diligent study of the histories of Egypt and India, and assisted by the great discoveries of Layard, Botta, Loftus, and Rassam, we, of the present day, can detect the incorrectness of this theory. In Greece a slow and gradual development of the Aryan spirit can be traced. The language of the Greeks has been found to have had a common origin with that of the Medes, Persians, and Indians, and prototypes of the divinities of Greek mythology existed in Assyria, India, and Egypt. It may well be assumed that a portion of the Aryan race remained on this side of the Himalayas, whilst the other settled on the further side. The language, the mode of writing, the social condition, and, above all, the art of the Assyrians, afforded conclusive evidence that a civilisation which served as a basis for the further development of Greek art sprang from Central Asia. Dr. Zerffi then went on to describe the extraordinarily high stage of development reached by Assyrian and Babylonish textile art, and the adaptation of its forms to architectural purposes, and drew attention to the evident fact that the artist everywhere tried to be allegorical, thus laying the foundation of innumerable fabulous forms later adopted by the Greeks. In conclusion, he said that evidence favoured the supposition that the nations on the shores of the twin rivers, the Euphrates and the Tigris, were the first to have an original style of their own, and that this style took its direct origin from textile art.

ASSOCIATED ARTS' INSTITUTE.

ON Saturday evening last a meeting of the members of this Institute was held at No. 9, Conduit-street, Regent-street, to take into consideration its present condition and future prospects. Mr. Lemon H. Michael, one of the vice-presidents, occupied the chair. Messrs. Bowes A. Paice and H. Jarvis (architects) were elected as ordinary members; and Messrs. R. Garnett (British Museum), W. Davis, and W. Rawlinson, were elected honorary members. The Chairman announced that during the recess the committee had been considering the steps necessary to be taken to ensure the greater success of the Institute. It appeared to the committee that some alterations in the rules were necessary to infuse fresh energy into the society. They recommended, in the first place, that the time of commencing the meetings should be eight o'clock instead of half-past eight, as it was thought that if the meetings terminated a little earlier than at present there would be time allowed for friendly and social intercourse between the members. It was also thought by the committee that some change should be made in the arrangements for the evenings on which sketches were exhibited (every alternate meeting night). At present, the rule was that the sketches submitted by members must be made to order, as it were, the subject being set or selected by the committee. This plan had proved a failure, and it was therefore proposed by the committee that on the evenings on which debates take place, the members be invited to bring down any sketches they may have (whatever the subject), or any other works of art of whatever kind. It was also thought desirable, with the view of obtaining a larger number of honorary members, that they should have more power in the management of the Institute. It was therefore proposed that their disabilities as to voting on matters connected with the conduct of the Institute should be removed, and that they should be eligible to serve as ordinary members of the committee of the Institute, the number of honorary members thus eligible being limited to four, or one-half the complement of ordinary members of the committee. Some minor alterations were also proposed. After some discussion, in which Mr. Day, Mr. G. R. Redgrave, Mr. A. B. Donaldson, Mr. Wilson, Mr. Phené Spiers, and other gentlemen took part, it was resolved to adopt the recommendations of the committee. A long discussion then took place on the financial condition of the society. It appears that there are 121 members in arrears with their subscriptions, some to the extent of five years, the total amount thus owing to the society being £67 2s. 6d. A member suggested that the committee and a few of the members should form themselves into a voluntary committee for collecting these arrears, and to devise means for increasing the number of members. This suggestion was warmly approved, but no action was taken on it. It appears that the Institute was originally known as the "Art Quibblers," and its meetings used to be held weekly in the private rooms of the members. In those days Mr. Scarlet Potter (the late hon. secretary), who has been the mainstay of the society from the first, was a student at the Royal Academy, and was instrumental in getting a great number of the Academy students to join. The members soon greatly increased in number, and it became necessary to find larger premises for holding its meetings. Professor Westmacott was asked to become president, and at his suggestion the name of the society was altered to "The Associated Arts' Institute." In the course of the discussion great stress was laid on the utility of such a society, embracing as it does architecture, painting, sculpture, engraving, &c., and having for its objects the promotion of an interchange of ideas between the professors of those various arts, and the imbuing of the public (by means of the honorary members) with the principles of art. It is claimed that great good has already resulted from the operations of the Institute, and that therefore it is worthy of increased support from the professions named.

◆

THE EDINBURGH ARCHITECTURAL ASSOCIATION.

ON the 2nd of November the opening meeting of this association took place at its hall, 5, S. Andrew-street, Edinburgh. Mr. Robert Morham occupied the chair, and, after some fitting remarks, called on Mr. James Gowans to deliver the introductory address.

The following are some of the most important passages in Mr. Gowans's address :—

There is no surer sign, he said, of the healthiness of any community than when you find them joining together for the purposes of mutual advancement, and I have often regretted that amongst architects there appeared to be a feeling of jealousy, a sort of dread, as it were, that one member should instruct another in matters considered patent to himself. Now, in my opinion, there can be no greater mistake than this, as the knowledge needed by an architect, in the true sense of the designation, is of such a varied kind that it is impossible for any man to acquire all or even a tithe of what he *ought* to know, unless he joins in such societies as this, and gets the benefit, by discussion or otherwise, of other men's views upon matters which may not have lain in his way, or which he may have had no other means of acquiring.

Every man has his own line of thought, and can do some particular thing better than another, and so it is that when a number of students of architecture are brought together to give their opinions on different matters connected with their profession, the whole members are benefited, as well as the originator of the subject, who generally gets enlightenment from the discussion which usually follows. Mr. Gowans then made some pertinent remarks on

THE USEFUL IN ARCHITECTURE.

The need of the architect making this his first consideration is very obvious. A thing to be of the highest value must be useful, and nothing more so than the houses we live in. A house should be arranged so as to suit, or even improve the habits of the people who live in it. It should be convenient for the carrying out of domestic arrangements in the simplest and easiest way. It should be a healthy house, otherwise it sadly fails in that which a habitation ought to be; just as we find that beauty and symmetry in nature go for nothing if the germs of disease are at the root of it.

In the matter of convenience and completeness, houses should be as far as possible self-contained, both inside and outside. This should be striven for in designing houses of all classes, but especially those of the lower, as the occupant is always more independent if he has his own door to go in by, and when in, to have each room so placed that it can be occupied independent of another; and no kind of designing taxes the architect more than that of arranging a small house so as to make it thoroughly useful in this respect.

A mistake is often made in not having the bedrooms of the largest size that the internal space will admit of, and the value of this is so well known to those who have the benefit of large sleeping-rooms, that the wonder is that architects should sacrifice the bed-rooms of a house to those of the day-rooms.

No man in the world has more to do with the health of a community than the architect. He has the means, so to speak, of creating buildings which will either be constitutionally healthy or unhealthy. If the house is contrived, to begin with, so that it is deficient in that which provides for ample light, ample ventilation, and good drainage, it gradually becomes a diseased house, which nothing will cure; and I cannot impress upon you too strongly the need of designing houses which will prevent, as far as possible, that share in the death-rate of our city which unhealthy houses lead to.

The evil of ill-arranged houses, bad drainage, and over-crowding, as affecting the health of the people, is every day becoming more important and better understood; I therefore press upon you in the most earnest manner the responsibility that attaches to your profession in this respect.

A useful, healthy, and beautiful building has a moral and physical effect upon people, apart altogether from its value as a beautiful object, and I do beg of you that, in planning, you give places where bad air is likely to be generated plenty of glass, plenty of daylight, and not windows which are mere pigeon-holes.

Glass does not shut out the benefits of sunlight to the same extent as stone walls do, and nothing is better for ventilation than the simple method of lifting up or taking down the half-sash of a window of ample size.

It pains one to see houses erected every day with these small openings, 12in. square, or something like that, which, apart from what I have mentioned, cannot even give light for the purposes of cleanliness, and such a sparing of glass can have no excuse now that we have no tax upon the number or size of the windows of our dwelling.

Apart from providing means for plenty of light or plenty of air, a house can be so arranged as to situate those places connected with the sanitary portion of the house so that the drains need never pass under the building at all. This system of passing sewerage drains right through and under the building is one of the greatest sources of disease that I known of. It is a mere question of planning to have closets and sculleries on the back wall of the house, free to be lighted and ventilated from the open air, and when this is done, the drain never goes further into the house than half the thickness of the outer wall. The main drains should always be at the back of the building, and not at the front.

Another important consideration as to drains is their ventilation. Drains, if treated as well-ventilated coal-pits are, need have no bad gases in them at all.

Drains, as they are usually formed, are sealed up at every possible point by traps and cesspools, and have the gases bottled up in such a way as to be under constant pressure, and find their escape into our houses at imperfect junctions of the drains, incomplete cesspools, or even through the cesspools themselves, as I verily believe that drains without ventilation have the gases acting in the same way as the gases of badly-ventilated coal-pits, and with their convulsions and explosions, forcing the bad air through the cesspools, however well-trapped they may be; therefore I am not at all satisfied with the present system of trapping drains.

I cannot leave the consideration of the useful without noticing particularly a failure in the design of many buildings as far as the useful goes, and that is, the disposal of what is considered the inferior part of the house (but which I think as important as any) so that it is almost impossible to give it that share in the structural and beautiful part of the building which it has a right to.

How often do you find, for instance, in villa dwellings, the kitchen part of the house standing out in the most objectionable way, which must not only render it an eye-sore to those who own it, but a continual obstruction in the view of others.

Architects who have the laying out of the grounds for villa-buildings can do much to prevent this by foreseeing how one building will stand in relation to another, as very often the ground is so laid off, that instead of the feuer commanding the view which he expected, he finds the principal rooms look out only upon that which obstructs the landscape.

Good planning, and giving the back of the building some little share in the taste which is wholly devoted to the front, would obviate this to a great extent.

Again, nothing about a house is of so much use as the chimneys, both for the purposes of smoke and ventilation, and yet how badly they are treated. They are placed in every possible awkward position, and are got rid of at the earliest possible point of the structure, so as to necessitate the various chimney-head devices which mar so much the sky line of many of our street and villa buildings. Why sould chimney-heads be treated so? You would suppose in some cases that the designer was ashamed of his roof and chimney-heads, and wished either to keep them out of sight altogether, or to degrade them so that they might have no share in the otherwise pretentious parts of the building. No parts of a building are more useful, or give the architect a better opportunity of crowning his structure with that which may be made beautiful.

Before leaving the useful, I would impress upon you the study that is needed for making our churches, theatres, and music halls, useful to the fullest extent. In all three the same useful elements have to be considered, viz. :—

1st. The form which will give least obstruction to sound, so that both speaker and hearer may lose nothing.

2nd. The position of the speaker in relation to the hearer, so that each may see and be seen.

3rd. The comfort of both as to seating, heating, and ventilation, so that full enjoyment may be derived from that which is spoken, acted, or sung.

These things being well considered, will assuredly lead on to that which is symmetrical and beautiful.

I stated at the outset that I wished to consider architecture in a common sense way, and to get at the sense of this division of it; I know of no better teaching than that which you get by looking how nature works in this respect. We find, for instance, that when man tries to get that which is most useful, the health, symmetry, and beauty of the thing desired go hand in hand.

If you wish to grow a useful tree, or to rear a useful animal, you have to consider how to nourish both, so that their vigour may not be impaired by bad soil, or bad feeding, or by anything that will impair the health of either; and if this is wisely done, you may depend upon it that more perfect symmetry and a more perfect beauty will be the result.

As in nature, so in architecture; and this leads me, without further preface, to speak of

THE STRUCTURAL.

A building may be convenient and healthy, but unless it is substantial and well-constructed it is of little value. No doubt a house may be made strong enough by the mere heaping up of material, without regard to proportion, symmetry, or anything else, but this is not treating the structure in a scientific way, or in that way which will lead on to its being beautiful. In any erection designed upon scientific principles, whether of iron, wood, or stone, there should be little or no waste of material; in short, neither more nor less than that which will give it stability and endurance. I admit that it is a difficult matter to get at this accurately, and that it is better to lean to the side of strength than that of weakness, as beauty will not easily be marred by that which gives it power, unless you go so far as to create the feeling of the structure being overloaded by the material which has been used in it.

An element in structure which ought never to be lost sight of is to consider what form is best adapted for enduring the strain which comes upon it, keeping in view, of course, the nature of the material which has to be used. For instance, it is a gross mistake to construct an arch of timber where the strain is that of a moving load, while the same form may be quite suitable and last long enough if the strain is the result of mere dead weight alone. It is a mistake, too, to attempt to combine materials of different properties, such as iron and wood, or malleable and cast iron together; they will never work equally, and should therefore never be combined.

As to the true use of material, I do not believe in any rule of thumb arrangement, but in that which springs from a geomertic foundation, and I would have architects therefore frame their designs upon that principle.

Taking stone as the material which architects have most to deal with in this country, I need not say how valuable a knowledge of geology and mineralogy is to the student. Geology instructing him as to what is likely to be found, and when found mineralogy enalbing him to determine whether the structure of the material is fit for the purpose required. The stone which is found in a district is always most suitable for it, if properly treated, and from a want of knowledge in these two branches of science I have seen architects and engineers adopt styles of building quite unsuitable to the charactor of the material they had at hand; this occasioned the using of stone from a distance, at a much greater expense, and not more suitable for the thing that had to be done.

I will merely glance at other considerations as to the structure :—

1st. A building must be perfectly strong, and fit to stand without fracture; therefore the foundations require to be thought of, that is, not founding one part of the building on soft and another part on hard ground.

2nd. Provisions for sustaining equally walls which have to go to different heights, or which may have to carry unequal loads.

3rd. The bonding of material together so that all may have their due share in sustaining the structure.

4th. The allowances which have to be made for settlement of walls, where a lighter thing has to be tied to a heavier, such as the spires and towers of churches, oriel windows, and such like.

5th. The strength and durability of material.

6th. The causes which lead to what is commonly called "*dry*-rot," but which I believe should be called "*wet*-rot," the result of timber being used which, to begin with, was constitutionally liable to the bad effects of damp, bad air, or other influences which tend to consumption.

These are only a few of the many points which, in a practical way, require to be considered, as every day we see buildings bulging, fracturing, and going to decay, from neglect of what could easily be guarded against in such cases.

No doubt some men are born with an intuitive perception for that which is proportionable and well-adjusted; just as we find men who have naturally a bias towards other things, and which they aquire more readily than the man who has to go to the fountain-head for his instruction. At the same time, the man who has the thing born in him cannot dispense with the mathematical rule, which leads him to the truth of the science which he is acquiring.

On the motion of Mr. John Dick Peddie, R.S.A., a vote of thanks was awarded to Mr. Gowans, and a similar compliment having been paid to the chairman, the proceedings ended. A number of photographs of classical structures, kindly lent by Mr. Matheson, of H.M. Board of Works, and Mr. David Cousin, were exhibited in the rooms.

◆

NEW ELEMENTS OF HAND-RAILING.*

(*Continued from page* 348.)

Plate 9.—Construction of Side Wreath, starting from a Newel.

It was formerly the custom to have the stairs start with a scroll and curtail step. This, however, has been superseded by the introduction of paneled octagon ornamented newels, and a side curve; which certainly give the stairs a more grand and finished appearance.

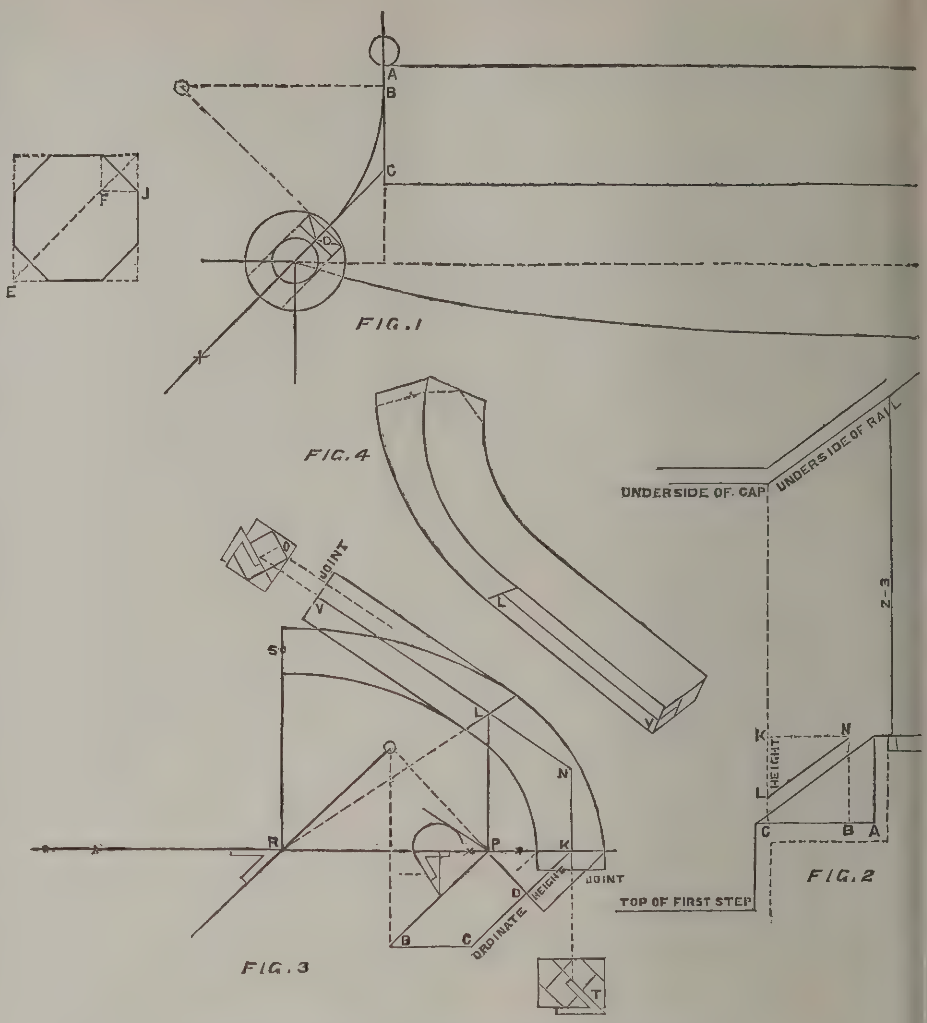
The newels are made any length desired, and the curve regulated to suit the passage.

Fig. 1 shows the ground plan. Let A, B, C be the centre line of straight rail. Take any point for face of riser, say A. Square this over to the right. Next set off the step. This done, fix upon position of newel or the distance its centre shall stand from centre of straight rail, say seven inches. This determined, draw the small circle to width of rail. Next form the right angle and bisect it. Then draw through the intersections cutting at C. Next draw size of mitre cap. Mark mitre of rail as shown. Let C B equal C D. Have the dotted lines meeting at O. Square with D C and C B. This fixes the position of tangents on the plan. The line D C on the wreath falls level, while C B stands on the pitch of stairs. This will be clearly seen by making the elevation of a step and riser.

Fig. 2. Let under side of rail rest on corners of step. Set off half its thickness. Make A, B, C equal to corresponding letters on plan. Square up from B C, cutting at N and L. Square over N K. This gives K L for height of wreath. It also shows height of newel, assuming short baluster 2—3.

But suppose the point C moved toward B, how would this affect the newel? In that case we add to the height. On the other hand, let C stand on the riser; then the newel is shortened. This shows that the height is regulated by length and situation of tangents on the plan.

Fig. 3 shows construction of mould. Commence by making the right angle O, B, C to equal corresponding letters on the plan. Let the angle B, C, D equal that on plan. The most ready way to do this: Take O for centre, and B as radius. Draw a circle toward D. This done, take C for centre, and B as radius, and intersect first circle at D. Then join O D. Have B P parallel with C D. Extend C D. Let D K, the height, equal that of L K, Fig. 2. Join K P extended, and we have the pitch. Also major axis. To find the minor, draw O R square with O D. Then square over K, P, R. Let K N equal D C, and P L equal P B. Join N L extended. This, to be correct, must equal corresponding letters at Fig. 2.



NEW ELEMENTS OF HAND-RAILING.—PLATE IX.

To find the bevel for joint V on shank:

Draw a line from P parallel with N L. Take any point on pitch and square over to cut B P, which gives bevel, as shown. Next, find width of mould by setting off half width of rail on each side of D. Then draw parallel with ordinate, cutting the pitch, and we have wide end of ellipses. Set off half width of rail below pitch, and draw to cut the bevel indicated by dotted line. Transfer distance along the bevel to each side of joint V, and draw straight shank parallel with V L. Let R S equal O B. Set off on each side of S half width of rail. Next, find points to insert pins. This being done, strike curves with a string.

Let plank be cut square through. Face one side. This done, lay mould on and mark joints; also tangents V N and K N. These being on surface of plank, the joints must be square with them and the surface.

Next apply the bevels, as shown, and mark square sections of rail on joints. You are now ready to cut off slab O from the shank, indicated by the dotted line. Work it to the bevel. This done, apply a square and draw from centre of section cutting at O. Continue this line along beveled edge, and square with joint. Transfer line L V to that on edge, and draw pitch through L. The meaning of this may be better understood by noticing Fig. 4, the plumb line or pitch just made being that of a square step and riser.

The application of the mould: Lay it on; Keep joint, on wide end, fair with that of stuff. Have the tangent K L to stand opposite bevel line on joint. Also, have the shank fair with beveled edge of stuff. Mark the surface of plank. Let the application be the same on the other side. Cut off the slabs and form the cylinder part of wreath. You are now ready to thickness. Observe slab T. This is on the lower side, and cut off square with joint. Work to the line, and square with that given by bevel T.

Mark the mitre same as that on plan.

Next, cut off slab from under side of shank. Work square with joint; also square with line made by bevel. This done, observe that the corner on concave side forms the easing and gives a direction to take off remainder of slabs. Now gauge to a thickness. Then cut mitre on both upper and lower side of piece, but not entirely off, until moulding is finished.

The upper part of plate, on the left, shows a method by which a square may be readily gauged so as to form an octagon. For example: Draw a line from corner to corner. Let E F equal one side of the square. Then draw F J. Set the gauge to this and run it on the sides of stuff. Work to the lines, and the octagon is complete.

◆

THE PRIORY CHURCH, DUNSTABLE.

We present our readers this week with a view of the very interesting western front of the ancient Priory Church at Dunstable, in Bedfordshire. The drawing* (made from a sketch, taken on the spot during the present autumn) hardly conveys a sternly true idea of the battered and defaced condition of the very beautiful details. Some one, we trust, will visit the edifice, and give us by way of attempted restoration some geometrical drawings from measurement. The lower and most valued portions of the front are admirable instances of the durability of the stone used by the old Norman builders.

◆

Cleveland Institute of Engineers.—The annual meeting of the Cleveland Institute of Engineers was held on Friday evening last at Middlesborough, Mr. Barrett, of Norton, in the chair. The hon. secretary read the report and submitted the balance-sheet, which were indicative of the Institute's prosperity. A discussion then took place upon Mr. T. Wrightson's paper on "Blast Furnace Hoists," read at the last meeting. Mr. W. Bowron, of Stockton, then read a paper on "Light and Heat in their relation to Motion."

---

* This series of articles is a reproduction of Robert Riddell's work on the subject, published in Philadelphia, and by by Trübner and Co., London.

* Made in black-lead pencil for photolithography by a mistake of the artist; and which we have had *traced* for the process *in Indian ink*. We allude to this as a caution.

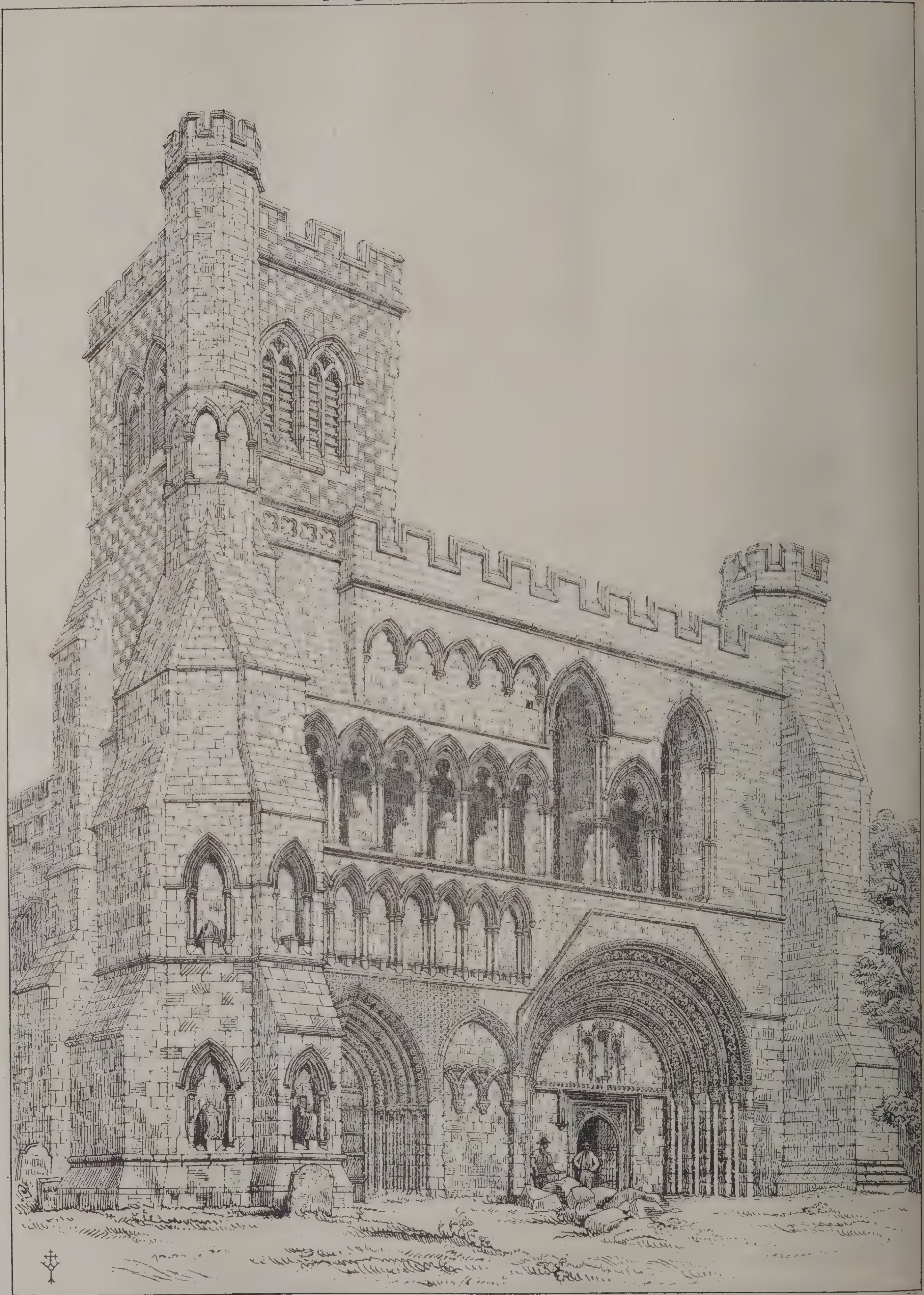


Photo-Lithographed by Whiteman & Bass, London.

THE PRIORY CHURCH, DUNSTABLE.

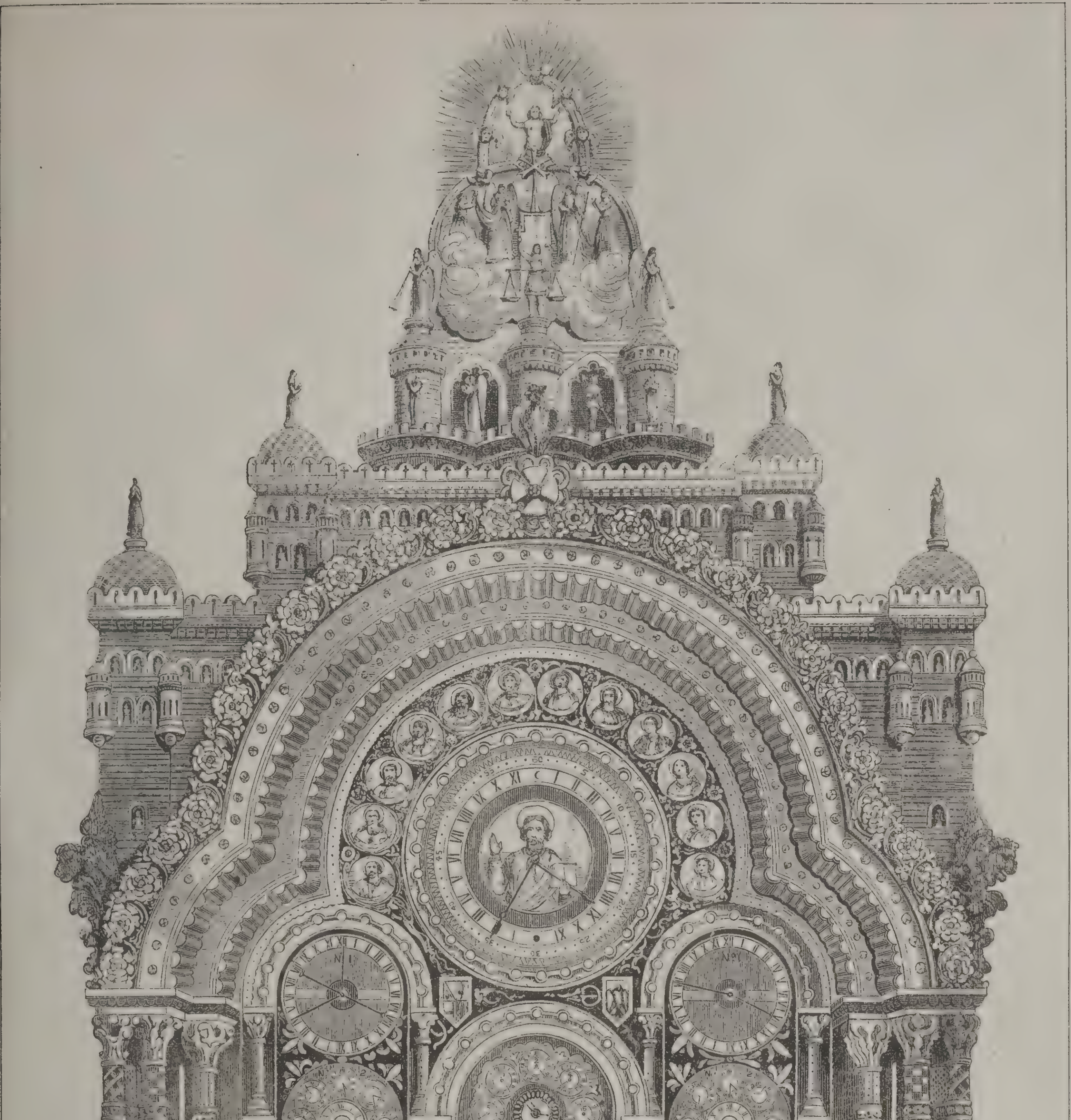


Photo-Lithographed by Whiteman & Bass.

THE GREAT CLOCK OF BEAUVAIS CATHEDRAL.

The Surveyor.

◆

THE INSTITUTION OF SURVEYORS.

THE opening address of the present session was delivered by Mr, Richard Hall, president, at the ordinary general meeting on Monday last. After congratulating the members on the satisfactory progress of the Institution, the president continued as follows:—

With the exception of the Irish Land Act, very few measures of general professional interest received the Royal assent during the past session, several bills having been withdrawn under its pressure. Although this measure is confined exclusively to Ireland, I trust you will not think it out of place if I endeavour to give a general sketch of its provisions, affecting as they do so considerably the relation of landlord and tenant in that country, and in carrying out which it is highly probable that some at least of our members may be engaged, and especially as the passing of this Act may possibly lead to the proposal of some legislative measure on the subject for this country.

The Act is divided into five parts: the first relates to compensation to tenants; the second to the sale of land to tenants; the third to advances by, and the powers of, the Commissioners of Public Works: the fourth deals with the legal proceedings and with notices to quit; and the fifth and last, with various details in the working of the measure.

The first and second sections legalize the Ulster tenant right and all customs of a similar nature, but leave it to the discretion of the tenant under these customs to claim, with the consent of the court, compensation under any other section of the Act, the occupation, however, thereby ceasing for the future to be subject to such customs.

Tenants not claiming under these customs and whose tenancies have been created since the passing of the Act, are, by the 3rd section, entitled to claim compensation if they are disturbed by the act of the landlord, such compensation to be determined by the court, and paid by the landlord, and not to exceed the following scale, viz.:—

When the rateable value is £10 or under, a sum not exceeding 7 years' rent.

Above £10	and not exceeding	£30	..	5 years.
,, 30	,,	40	..	4 ,,
,, 40	,,	50	..	3 ,,
,, 50	,,	100	..	2 ,,
,, 100	a sum not exceeding		..	1 ,,

In no case is the compensation to exceed the sum of £250.

Tenants, the annual value of whose farms is such as to place them under a higher class in this scale, can at their option claim in a lower class, provided that the amount of rent, to which the multiple is applied to calculate the compensation, is proportionately reduced. Unless this provision had been enacted, an occupation of the rental value of, say, £41, would only have entitled the tenant to claim three years' rent, or £123; whilst, in the case of one rented at £40, the tenant could have claimed 4 years, or £160. This scale of compensation is also extended to yearly tenancies existing at the time of the passing of the Act in cases in which the rateable value does not exceed £100. Subletting, or subdividing the holding without consent, or letting in conacre after prohibition by the landlord (except for growing potatoes), disentitles the tenant to compensation for disturbance, and no tenant will be entitled to compensation who holds under a lease for 31 years, granted after the passing of the Act. Under another section (13), assignments without consent, in certain cases of tenancies existing at the time of the passing of the Act, bar the tenant's claim under this section.

Section 4 provides for compensation for improvements made by tenants who cannot, or do not, claim under the Ulster and other customs before alluded to; but they cannot claim for improvement made before the passing of the Act, or 20 years before the claim is set up, other than the erection of permanent buildings, or the reclamation of waste lands.

No tenant who has claimed for disturbance of his occupation, under the third section, more than four years' rent in cases in which the rateable value exceeds £10, and more than five years in cases in which it is less than £10, is entitled to claim additional compensation for improvements, other than for permanent buildings and the reclamation of waste land. Compensation is not to be given for improvements made within two years of the passing of the Act, if prohibited by landlord, and appearing to the Court to be injurious to the estate; or if made in accordance with an agreement for valuable consideration; or during the unexpired residue of the term of a lease granted before the passing of the Act; or if in contravention of such a lease, or of a contract made either before or after, provided the tenant can legally make such a contract.

In cases where a lease for 31 years is granted, the tenant, at its termination, can claim only for permanent buildings and reclamation of waste, and for unexhausted tillages and manures; and if any tenant quit a farm voluntarily, he is only to be entitled to a compensation for improvements if his landlord refuses to allow him to dispose of his interest in such improvements to any incoming tenant. The tenant under this section cannot be prohibited from making improvements which are for the benefit of the occupation; but he is forbidden to break up pasture, or cut timber which has not been planted by himself or his predecessor in title, except with the consent of the landlord.

The improvements to be compensated for are defined in the 70th section to mean, any works which adds to the letting value of the occupation; and also tillages, manures, and the like farming works, the benefit of which remains unexhausted at the time of quitting the farm. In the cases of improvements claimed for, which have been made before the passing of the Act, under a tenancy existing at the time of its passing, the Court can take into consideration, in reduction of the claim, the time they have been enjoyed, the rent of the occupation, and any benefits received, in consideration, from the landlord. Out of the compensation which may be awarded either under this section or under the last for disturbance may be deducted all arrears of rent due to the landlord, and the value of any deterioration in the occupation, arising from the nonobservance of an agreement, and also any taxes payable by the tenant. A tenant is forbidden from entering into a contract that would have the effect of relieving the landlord from the penalty attached by the 3rd section to the disturbance of a tenancy, or from the payment for improvements provided for in the 4th, unless his occupation (not being subject to the Ulster or other customs), or the aggregate of his occupations in Ireland, be of the rateable value of not less than £50, in which case he can contract with his landlord not to claim under any section of the Act.

The 5th section provides, in cases where the Ulster and other customs do not exist, or where the tenant does not claim under them, that all improvements shall be presumed to have been made by the tenant or his predecessors, unless it be proved to the contrary; except in certain cases of improvements made before the passing of this Act, viz.:—

Where they have been made before the landlord became possessed of the holding.

Where the tenant holds under lease, or the improvements were made 20 years before the Act was passed.

Where the holding is assessed at more than £100, or the practice on the estate would tend to show that the landlord made, or assisted in making the improvement; or where the Court shall judge that they were not made by the tenant.

The 6th section provides a machinery for the registration of the improvements made either by the landlord or tenant, which, if not objected to at the time, will be *prima facie* evidence of the fact hereafter. This provision will probably be found very useful in preventing fraudulent claims, and avoiding some of the litigation which must be the result of the compensation clauses.

The 7th section deals with the cases of tenants who have not obtained compensation, either for disturbance of their tenancies or as claiming under the Ulster or other customs, in cases where it appears that they or their predecessors have paid money on coming into the occupation, with the implied consent of the landlord; provided that no opportunity afforded to the tenant for disposing of his interest has been neglected; and also provided that the money has not been paid during the existence of a lease made before the passing of the Act. The Court is instructed to see that the consideration, proved to have been paid for coming into the occupation, did not include any payment for improvements which may have been claimed, and paid for, under the 4th section of the Act, in order to protect the landlord from paying again for such improvements. Arrears of rent, &c., may be deducted out of the sum to be paid by the landlord, as in the other cases of compensation.

The 8th section secures to the tenant, not claiming under the Ulster or other customs, the right to the away-going crop, and the 9th and 10th lay down the limitation as to what disturbances in the tenancy by the landlord may be considered to entitle the tenant to compensation under the 3rd section. Ejectments for arrears of rent, for breach of covenant against assignment, for subletting, bankruptcy, or insolvency, are not to be so considered, nor is the resumption of a part of the holding (not exceeding one twenty-fifth part) for the purpose of erecting cottages. The tenant who is ejected for arrears of rent or breach of covenant is to be treated as if he were quitting voluntarily. The Court has power, in the case of a tenancy existing at the time of the passing of the Act, to declare an ejectment for arrears of rent a disturbance to be compensated for, if the arrears of rent have not wholly accrued within the three previous years; and in cases where the rent is £15, or under, if they consider such rent to be an exorbitant one, and that the arrear has therefore arisen. In similar tenancies, evictions by the landlord in consequence of the exercise by the tenant of any right not necessary to the due cultivation of his holding, shall, with the approval of the Court, not be considered to be a disturbance entailing compensation; nor shall eviction, in consequence of the unreasonable refusal of the tenant to allow the landlord to enter on the holding for the purpose of mining, quarrying, cutting timber, making roads or drains, viewing the lands, or sporting. Lands near towns, let at an accommodation rent and occupied by persons living in such towns, or grazing farms of the rateable value of not less than £50, or any grazing farms on which the tenant does not reside, are only entitled to claim compensation under the 4th, 5th, and 7th sections; and holdings, occupied by reason of the tenant being a hired servant, or in conacre, or for temporary pasturage, or as a cottage allotment, of not more than ¼ acre, cannot claim any compensation under the Act. The tribunals intended to award compensation and settle disputes under the Act are the Civil Bill Court of the county in which the occupation is situate, or a Court of Arbitration. The judge or chairman of the former has power to take evidence on oath, and to compel the attendance of witnesses; he is to decide questions of fact without a jury, and may, with the consent of the parties, determine cases in Chamber. An appeal from his decision may be made to two Judges of Assize.

The Court of Arbitration is provided to consist of two arbitrators and an umpire, having the same powers as the other Court, but unable to punish for contempt or enforce its awards, except through the interference of the Civil Bill Court. The award is, however, final, and cannot be appealed against.

The second part of the Act provides that, when the landlord agrees with the tenant for the sale of a farm to him, they shall apply to the Landed Estates Court, which on receiving a deposit to cover costs from the landlord, is empowered, after making inquiries for the protection of all claimants on the estate, and for the tenant's interest, to carry out the transactions, if the terms are approved by the Civil Bill Court.

In the next division, the Commissioners of Public Works in Ireland are authorized to advance to tenants two-thirds of the purchase-money, if they are satisfied with the security; and they may also advance a similar proportion for the purchase, by tenants, of estates for sale in the Landed Estates Court. The loan is to be repayable by an annuity, at the rate of 5 per cent., extending over 35 years, secured on the property, and having priority over all other charges, except quit rents and charges incident to the tenure of the land. Whilst this rent-charge remains, the property purchased cannot be alienated, assigned, subdivided, or sublet, and any portion so treated shall become forfeited to the Board, to be devoted to public purposes. This condition will prevent the further subdivision of the property, until the rent-charge expires, and, in this respect, is important. If a landlord is unwilling to sell his estate in lots, the tenants of four-fifths in value of the whole may purchase, if they can find persons to buy the remainder; and the purchase-money can be advanced on similar terms. The Board can also lend money to landlords to pay the compensation to tenants for improvements, and to reclaim waste land; and can also make advances of half the purchase-money of such lands, on the joint security of vendor and purchaser. All these advances are to be repaid by similar annual rent-charges, extending over 35 years. These rent-charges can be redeemed on a scale set out in the schedule to the Act, calculated on the assumption of the original purchase-money being repaid by half-yearly instalments, in 35 years, with interest at 3½ per cent. The advances which are authorized by the Act to be made are to be paid out of the Consolidated Fund, and are not to exceed the sum of £1,000,000.

The fourth and fifth parts of the Act relate to certain legal proceedings, to the Court, and to miscellaneous details. Notices to quit, which must be written or printed, and signed by the landlord or his agent, are subjected to a stamp duty of 2s. 6d., and they must be given six months before ejection, such period to terminate on the last gale day of the calendar year, in the absence of agreement to the contrary. A person not complying with this provision in serving a notice is liable to a penalty of 40s. In the cases of occupations liable to the county cess, if the tenancy has been created after the passing of the Act, the tenant can deduct one-half of the payment out of his rent, and if the rent does not exceed £4, the whole of it.

I have endeavoured, thus briefly, to sketch the leading features of this complicated measure, which appears to have been chiefly framed with the view of imposing *a heavy fine on evictions, securing to the tenant the benefit of his improvements, and enabling him to become the owner of his occupation.* It is impossible at present to fortell the effect of the somewhat arbitrary compensation clauses, but it is not unlikely that they will tend to extinguish small occupations, because landlords will fear to subject themselves to the heavy penalties attaching to them. One can hardly avoid arriving at the conclusion that political expediency rather than absolute justice induced Parliament to enact them.

Throughout the Act, the tenant is most carefully protected, and with the Ulster custom legalized and his tenancy secured from disturbance, he in fact possesses, as it were, a joint interest in the property with his landlord. This cannot fail to exercise a considerable effect on the value of property, in addition to the revolution it must bring about in the relations between landlord and tenant. It is to be feared that the Act will provoke much litigation on the claims of tenants for improvements, which, after the lapse of time it will be difficult for the landlord to disprove, the presumption being in their favour. Where the Ulster and other customs do not obtain, landlords will be likely to endeavour to avoid tenancies under £50, in order that they may contract with their tenants to be relieved from the provisions of the measure. The clauses enabling the Government to advance money are very important, and may prove advantageous to the country by affording means for the reclamation of waste land; they will, however, encourage sales to tenants, and it is difficult, at present, to predict the effect which will be produced by the consequent subdivision of estates.

As I have already said, the consideration of this question almost naturally leads us to that of the relations of landlord and tenant in this country, a subject which would appear to be, at this juncture, pre-eminently worthy of discussion by the members of this Institution. It is true that the excellent paper by Mr. Squarey, and the discussion that followed, have nearly exhausted that part of the subject relating to the cultivation of the soil; but the important question of the advantages or disadvantages of leases and the principles to be adopted in dealing with what are termed permanent improvements, still remain to be considered. A lease, no doubt, secures to the tenant the advantage of being able to lay out his capital and make the most of his farm, with the knowledge that he will have time to repay himself with interest. It, however, sometimes proves a clog even to him, and it hardly affords such a security to the landlord, in the event of his lessee failing to carry out its provisions in their integrity. I am somewhat inclined to prefer the principle of shorter tenancies, provided that the agreement is framed with a due regard to the interests of both landlord and tenant, and includes some system by which the latter may be compensated for outlay the benefit of which he has not fully reaped. The important axiom laid down by Mr. Huskinson in his remarks on Mr. Squarey's paper, should, however, be kept in view, namely,—that tangible and visible results only should be paid for. I was not surprised to learn from him that the average farming of Scotland, where leases almost universally prevail, hardly equals that of Lincolnshire, with its tenant-right custom.

The question as to what part, if any, of the outlay for permanent improvements should be incurred by the tenant, is also one which may be considered with advantage. In this term are included those improvements which tend to enhance the productiveness of the land and increase its value permanently, such as the erection of buildings, drainage, water supply and storage, fencing, road-making, and the reclamation of waste. I am disposed to think that works of this character should fall entirely within the province of the landlord, and that the tenant should pay an extra rent rather than contribute the whole or any part of their cost. The facilities for borrowing the necessary capital of which the landlord can avail himself very considerably diminish the difficulties in his way; but we have occasionally to deal with owners who cannot, or will not, perform even works of necessity, and in cases of this kind the tenant must often bear expenses in self defence The comparative advantages of large and small farms, is another branch of this subject which affords important matter for consideration. The practice of throwing farms together, and thus getting rid of small occupations, is increasing; and by diminishing the extent of building necessary for the occupation of the land is of considerable advantage to the landowner. Large holdings tenanted by men of capital encourage a high system of cultivation and afford ample scope for the use of steam power, but have a tendency to lessen the amount of labour employed. This practice, however, would perhaps be of doubtful expediency for the general interest of the community, if small occupations could be maintained in their full productiveness. The difficulty experienced is to be found in the want of the capital necessary to enable the small occupier to obtain the greatest possible return from the land, and at the same time preserve it in condition. If this and adequate skill were forthcoming, no doubt the general supply of produce would be increased.

Two other subjects connected with this branch of the profession I would commend to members as being highly deserving of attention, and I trust that some one may be found to give us a paper on each. I allude, first, to the management and economy of timber and plantations. Although iron has to a great extent superseded wood in shipbuilding, and the cultivation of large oak plantations has thus become of less importance, it is quite possible that some other branch of industry may arise to utilise this material, and there must always remain a large extent of surface which will yield a more profitable return in under-wood or plantations than if devoted to pasturage or arable culture, to say nothing of the value of plantations for shelter.

This latter observation applies particularly to larch, which is a quick growing and most useful description of wood, adaptable not only for building and estate purposes in general, but also for pit-timber, railway and tramway sleepers, and poles for the telegraph service.

The other subject is that of ordinary land drainage (as distinguished from outfall or arterial), on which we have already been favoured, by Mr. Grantham, with a most exhaustive paper. Details of the cost per acre, the distance of the drains from one another, their depth in various soils, and the effect which has been produced, would be found very useful, and add a valuable item to our statistical information. Other branches of the profession yield abundant materials for papers of interest equal to these, more especially that branch which deals in various ways with land and buildings in the metropolis, and other large towns and their suburbs. I may take the opportunity of reminding members who belong to it that they are strongly represented in the Institution, and that papers would be very acceptable on such subjects as the value of building sites and of the buildings thereon, the costs and results of the foundation of new streets, or the conversion of old buildings to other purposes.

I do not know that any other topics calling specially for consideration at present occur to me; but in a profession dealing, as ours does, with so many and such varied interests, lack of useful subjects for discussion can scarcely ever occur, and the more all such subjects are discussed the easier our path will be rendered in carrying out the practical business arising from them.

Before concluding, I should like to draw the attention of members to the large increase in the number of volumes in our library; though this is so, we still require very many standard, text, and other works to make it the complete library of reference it is our ambition to see it become.

I would, therefore, appeal to all members who may happen to be possessors of such works to make contributions to our shelves, and whilst saying this avail myself of the opportunity of thanking those who have already so contributed works, in some instances of great rarity and value.

In conclusion, I must request the kind co-operation of all in furthering the endeavours of the Council to extend the usefulness of the Institution to the profession in general. It is by the constant interchange of opinions that our ideas are enlarged; and it cannot be doubted that the association of individuals by frequent meeting must have great advantages as compared with the isolation that up to the period of the foundation of our Institution characterised our body.

May we not, without extravagance, indulge a hope that before long our society may include in its ranks every qualified surveyor in the kingdom, and that its membership may be sought as an honourable distinction and guarantee of professional standing and position?

After a few remarks by members, a cordial vote of thanks to the President for his able address terminated the proceedings.

MONUMENTAL CLOCK FOR THE CATHEDRAL OF BEAUVAIS.

ONE of our illustrations is a good representation of a magnificent clock lately completed for the famous Cathedral of Beauvais, and at present in Paris, from whence, if the presence of the German army had not prevented, it was to have been removed last month.

The clock has been executed from the designs of R. P. Pierart (pupil of R. P. Martin). The mechanical portion was entrusted to M. Aug. Beaudouin, principal artist in the atelier of M. Verite; M. Constanciel, of Paris, is responsible for the statuary, and Messrs. Frère Arthème and M. Lenormand for the decoration. The clock is twelve metres in height, five metres twelve centimetres wide, and two metres eighty-two centimetres in depth. A French description informs us that "it has been conceived in the severe style of the Roman epoch, but decorated with all the richness of Byzantine ornamentation." The clock rests on an oblong base so constructed as to form solid pedestals at each corner, each of which support a group of five columns supporting a triple archivolt, which forms a kind of porch over each face of the clock. The great dial of the clock is placed in the tympanum. Around it are representations of the principal saints whose days occur in each month. The remainder of the work above this is better seen from the illustration than from any description.

In the "symbolical" portion at the summit is Our Saviour with glorified spirits and angels beneath. At his feet the earth reposes, waiting for judgment; at his right and left respectively stand S. Mary and S. Joseph. Eternity is represented by the wave. The triple city represents the world; above is S. Michael, the archangel; the cock is the Christian symbol of the awakener of conscience. On the highest turrets of the tower stand Noah and Moses. In the façade are representations of Childhood, Youth, Manhood, and Old Age, as well as the seven cardinal virtues and the seven deadly sins. The gate of heaven, guarded by the good angel, is on the right hand of the centre turret; the gate of hell, with the evil one, on the left hand.

The figures representing the four ages of life move out of their places at each quarter of the hour, commencing with Childhood. At the sounding of each hour the cock crows three times, imitating at the same time the natural movements of his species. At the last stroke of the hour the hand of the Saviour gives the sign for Judgment. The virtuous and the wicked gather respectively to the right and left of S. Michael's balance, the latter encompassed by flames, according to the prophecy, "God shall judge the earth by fire."

This wonderful piece of mechanism, which consists of no less than 90,000 separate pieces of metal, was exhibited at the last International Exhibition at Paris. The gentleman who supplied us with the engraving said he would have gone from London to Paris any day merely to see this extraordinary clock.

CHURCH BUILDING AND RESTORATION IN DEVON.

From an Occasional Correspondent.

SCATTERED about far and wide throughout the beautiful county of Devon, are works recently executed or in progress which, although as a rule not of any great extent, may yet be noted with interest, perchance with profit, by the public generally; with interest at least their record will be greeted from all those who know, and have lived in the bright and balmy sunny west. Briefly, then, we will note a few items which have occurred to our notice since last we wrote.

S. Pancras, Widecombe-in-the-Moor.—The chancel of this church has recently been repaired by the Ecclesiastical Commissioners, under the direction of Mr. Christian, and it is now proposed to reseat and effect general repairs in the nave, aisles, and transepts. These restorations will be executed from the plans of Mr. Ashworth, the diocesan architect. Widecombe boasts of a large church, which, in some of its features, is uncommon. The ground plan consists of a very short chancel and aisles, nave and aisles, and north and south transepts, south porch, and west tower of Late Third Pointed work. The chancel and aisle roofs are *above* the line of the roofs of the nave and aisles, and although the chancel itself is very short, it extends behind the eastern wall of the aisles the depth of the sanctuary. In most Devon churches of this size we find the three eastern gables in the same line, the chancel and nave roofs on the same level, and a much larger chancel.

S. Michael's, East Anstey.—Here the chancel has been rebuilt, and the nave newly seated with low deal benches. The stalls are enriched with carved poppy-heads. The chancel and aisles are laid with Minton's tiles, and there is also a new font. Mr. Ashworth is the architect, and Mr. Wood, of Lurley, near Tiverton, the builder.

S. Sidwell's, Exeter.—This church is now undergoing the addition of a new chancel, which will be a great improvement to the building, both æsthetically and ritually. S. Sidwell's (*i.e.*, S. Sativola, a pious Exeter maiden, whose mother murdered her with a scythe, *circa* 740), was built in 1813 on the site of an old and much decayed church. The tower, however—which, by-the-bye, boasts of the finest peal of bells in the city, excepting only, of course, those of the cathedral—was not erected until 1823. The pillars which separate the nave and aisles are old, and the ancient carved capitals are particularly unique and interesting. There will be a new pulpit of Caen stone. Mr. Ashworth is the architect of this church also, Messrs. Hunt & Seacombe the builders, and Mr. Germain the clerk of the works. The cost will amount to about £1,000

S. Mary's, Axminster.—The interior of this church, which is a cross church, a form not very unusual in the eastern part of the county, as well as the adjoining county of Dorset, is being restored from the designs of Mr. Ashworth. The galleries have to a great extent been removed; the floors in the chancel, which were in a miserable state, repaired; and the nave and chancel reseated throughout with open deal benches. The carved arcade capitals are nearly all new, and are excellently done, the angels especially deserving praise. Messrs. Digby & Son, of Ottery S. Mary, are the builders, and the carving is by Hems, of Exeter. The cost will be about £600.

Malborough, near Kingsbridge.—Malborough Church has recently been re-opened after restoration. As this church will contain within its walls nearly the whole of the present population of the parish, and as there is no evidence at all of a lessened population in recent times, it is manifest that the late mediæval church builders had other objects in view and other thoughts in their minds than merely the accommodation of the worshippers. They evidently thought of Him whom they worshipped there more than the men of our times mostly do.

Holy Trinity Church, Landkey, near Barnstaple, has been restored under the directions of Mr. White, F.S.A., of Wimpole-street. This is certainly a very successful work, and will very soon look more like an old church, thoroughly well cared for, than a modern restoration. The church is small, and yet, during the progress of the works, four fine recumbent tomb effigies were discovered, of which the existence was not even suspected. It may be worth while observing that the floors of the seats in this church are paved with wooden blocks, placed on a level with the passages. This is a most convenient arrangement in many ways. There is a ready access to the seats, the floors are easily cleaned, the seat ends are thus kept some three or four inches lower, and unless in the winter season they should become damp, and consequently cold, there seem to be many reasons in favour of its more frequent adoption. Mr. White is also engaged on a new church at Farringdon, near Exeter, which is making rapid progress towards completion, under the superintendence of the clerk of the works, Mr. Vicary.

S. Michael's, Otterton.—Mr. B. Ferrey, F.S.A., is the architect of this ornate little church, which, with the exception of the tower, is entirely new. The works are making rapid progress, the building being now entirely covered in, and it is anticipated that by Lady-day the contract will be completed. The style is Early Geometrical, and the materials used are Berry-head limestone, with Ham-hill stone dressings in the exterior work, and Caen, Corsham and Beer stone in the interior. The ashlar of the walls, together with the chancel and arcade arches, is of this latter material, of which it may be noticed a great part of Exeter Cathedral was built. The nave columns are of Devonshire marble, as also are the chancel steps, and that rich material is freely used elsewhere on the building. The stone carving is very profuse, and if we judge rightly from the little already executed, will be exceedingly effective, being simple and artistic in its treatment, and full of grace and life. The entire cost will be about £8,000, and this sum has been entirely defrayed by Lady Rolle, who it may be remembered also built the new church at Bicton and the new chancel at Exmouth. Mr. T. Burridge, of Exmouth, is the contractor, and Mr. Thomas Cloutman the clerk of works.

Chittlehampton. — The parish church of Chittlehampton is to undergo general repairs and is to be reseated. The remarkably fine tower is well known to all Devon men. It is very unlike our Devon towers in general, and bears a far closer resemblance to a Somerset tower than a Devon one.

Smallridge, near Axminster. — All Saints' Church, built nearly thirty years ago, from the designs of Mr. B. Ferrey, F.S.A., has recently received some little additions; the blocks left for carving at the time of its erection having been carved, together with some angels in the apse; the cost being defrayed by the vicar, the Rev. J. Brine.

S. Mary's, Totnes.—The restoration of this church by Mr. Gilbert Scott progresses slowly. The last addition is a new vestry, which has just been erected. Mr. Reeves, of Totnes, is the contractor. Funds are much wanted for the further restoration of the nave and chancel, of which much remains to be done.

Barnstaple.—The parish church of SS. Peter and Paul is to receive further additions, in the shape of oak stalls in the chancel, and a number of angels for the roof, which are also to be in oak. Mr. G. Gilbert Scott has furnished the designs; Mr. Dendle, builder, of Barnstaple, is executing the woodwork; and Mr. Harry Hems, of Exeter, the carving of the stall ends and of the angels. It is expected that the whole of the work will be fixed by Christmas.

S. Andrew's, Plymouth.—Considerable alterations are to take place in this church, as also in the surrounding burial ground. For this latter work the tender of Messrs. Call & Pethick for £913 has been accepted, which includes the lowering of the alley and the erecting of an ornamental boundary wall all round. Thr contract of Mr. H. Hems has also been accepted for a new pulpit of Corsham stone, upon a granite base. It is octagon in plan, and in the centre panel there will be a figure of S. Andrew. The columns and panels are of Devonshire marble. Mr. Hine is the architect. J. V.

◆

ARCHITECTS' DRAWINGS.

Court of Exchequer, Nov. 16.

Sittings in Banco.—Before the Lord Chief Baron and Barons Martin, Bramwell, and Pigott.

EBDY *v.* M'GOWAN.

This case, which raised the question of an architect's right to retain plans as against his employer, came before the Court of Exchequer again on Wednesday. The trial, with the details of which our readers are acquainted, took place before the Lord Chief Baron, at Guildhall, when a verdict was returned for the plaintiff — damages £106 13s. 11d. During the present term Mr. Aspinall, Q.C., on the part of the defendant, in pursuance of leave reserved by the learned judge, moved for and obtained a rule to reduce the damages by £97 12s., the charge for the vicarage, and it now came on for argument. Mr. Digby Seymour, Q.C., and Mr. Bruce showed cause against the rule, and Mr. Aspinall and Mr. Edge supported it. At the trial it appeared that some dispute arose between the parties as to the terms of payment, and that the defendant refused to pay unless the plaintiff gave him the plans and specifications of the vicarage. This the plaintiff refused to do, on the ground that it would be contrary to the rules of the profession. The secretary of the Royal Institute of British Architects, Mr. Seddon, deposed that it was the custom among architects to keep the plans, whether the works were executed or abandoned, and that they always viewed them as their own property; and Mr. Fogerty, another architect, gave corroborative testimony. On the other hand, the defendant called Mr. Smirke, who said that when the works were completed it was the practice of architects to retain the plans. Upon being asked what was the practice in a case like this, where the building was not constructed, and the architect was paid 2½ or 3 per cent., he said his had been to offer his client the plans, not as a matter of courtesy, but because he thought he had a right to them, observing that if it were otherwise there would be no *quid pro quo.* The Lord Chief Baron, however, withdrew the question of custom from the jury, and left it to this court, who were to be allowed to draw inferences from the facts proved.

Mr. Seymour said—It must be assumed from the verdict that the jury had found the custom in his favour, and urged its importance on the ground that if an architect could not retain his plans, they might be placed in the hands of a rival or incompetent person, who might spoil his design, and bring discredit upon his reputation. With respect to the argument that the employer got no return for his money if the plans were withheld, he replied that he had the benefit of the architect's thought, study, and skill in preparing them, and that if he choose not to carry them out it was his own fault. Again, if the plaintiff gave up his plans another architect might be employed to erect the building, and he, instead of the plaintiff, would get the additional percentage.

Mr. Baron Bramwell—Supposing the architect dies, can his executors keep the plans, and yet demand payment for them? Mr. Seymour said Mr. Ayrton, the First Commissioner of Works, had claimed the plans of the Houses of Parliament by Sir Charles Barry from his son, but the demand was objected to.

Mr. Baron Bramwell—That case proves nothing, because at present we don't know who is in the right. Mr. Seymour admitted there was no evidence to show that executors would be entitled to retain the plans, but relied on the universal custom, which he contended should prevail unless it was an unreasonable one.

Mr. Baron Bramwell—Let an architect say he intends to keep his plans in any case, and his employer will know how act. Mr. Seymour—I contend that, taking into account the custom, that is what my client really did say.

Mr. Baron Bramwell—Any man in his senses, on being apprised of that beforehand, would either say he would have nothing to do with the architect, or expect to pay a much smaller sum. Mr. Seymour—He would get no architect to act for him.

Mr. Baron Bramwell—He would get plenty, and if not let him do without one.

Mr. Seymour—He would get no architect who was governed by the rules of his profession. It is the interest of the public that a man should have the superintendence of the work he designs, and a contrary course would give rise to great practical inconvenience, and indeed sap at the root of the profession.

The Lord Chief Baron instanced the case of an attorney whose bill of costs had been paid, in a suit which had come to an end, and observed that it would be absurd to say that he could insist on retaining the briefs and other papers when demanded by his client. On the question of inconvenience, he thought the argument was in favour of the employer, because, in the event of making repairs or alterations, without the plans could he know the direction of the flues and drains or other matters necessary to be known?

After some further discussion upon the case,

The Lord Chief Baron, in giving judgment, said they had to determine whether it was part of the contract, to be implied from the evidence and the nature of the case, that in the event of the employment being stopped by the act of the defendant before the whole performance of the contract, the plaintiff should be entitled to retain the plans. The plaintiff had given evidence of the custom, and he was entitled to incorporate it in his contract. On the other hand, Mr. Smirke, a gentleman of great experience and ability, said he should give up the plans when they were asked for; but his evidence on the point was somewhat loose and unsatisfactory, and the plaintiff and two other gentlemen said positively that the custom was, even when a building had not been commenced, for the architect to keep the plans. That being so, he confessed he was not prepared to pronounce an opinion upon the matter; but that was unnecessary, inasmuch as the question was, supposing the custom existed, whether it was a reasonable custom. He was clearly of opinion that it was an unreasonable custom, and could not be imported into a contract except by express stipulation. No such right existed, and it was contrary to good sense and justice. If an architect could retain his plans, which involved, for example, an estimate of £10,000, his employer would have to pay 3 per cent. on that, or £300, and get nothing in return —that was to say, in a case in which the building was never commenced. He paid that for nothing, or for services which were perfectly useless to him. He therefore thought the defendant was justified in refusing to pay until the plans and specifications were delivered over to him.

Mr. Baron Bramwell, in concurring, said he did not think the case was an important one as governing the future, because people could make their own bargains with respect to the possession of plans. An architect might say, "You retain me on the terms that I keep the plans; and though you get no benefit from what I have done, still you shall pay me." But I do not think it is very likely that such agreements will be made. He desired to speak with all respect of a profession which embraced within it so many distinguished men, who were a credit to the country; and he believed they would not put forth anything which they believed to be unreasonable or unjust; but in his judgment the usage now set up was impossible and perfectly suicidal. It only need be stated to show it did not exist. It no sooner came into existence than it cut its own throat by its absurdity. (Laughter.) The only way to meet a profession which set up an usage of this kind was to call a large body of the public into the witness-box, and ask them what they thought of it. Where the building had been completed and the employer had paid the architect his 5 per cent. he had derived the principal part of the benefit of his work; and whether the architect ought in that case to deliver up his plans was another question. He did not wish to conclude that question; but he would make this observation with regard to it —that if the employer was entitled to the plans when the employment stopped midway it was rather strong to say he was not entitled to them afterwards. All the convenience of the thing was in favour of giving over the plans. It would be a great convenience to an employer to know how his house was built in parts which could not be seen from the exterior, such as drains and flues, and it was important, therefore, that he should have the plans. As to a man's reputation being injured by his plans being confided to incompetent hands, he thought that was a futile argument, observing that the probabilities were the other way, and that people were not in the habit of making bargains on the footing that something unusual or abnormal would took place.

Mr. Baron Pigott agreed that the contract contended for was not only absurd and ridiculous, but actually impossible. The rule was then made absolute to reduce the damages by £60, and by a further sum of £21.

SCHOOLS OF ART.

ISLINGTON.—Professor Huxley last week distributed the Queen's prizes and pecuniary scholarships awarded to the students of the evening classes, and pupils of the Islington School of Science and Art, which, since its establishment in 1862, has, besides several gold, silver, and bronze medals, carried off two £50 exhibitions, tenable for three years, and six £10 scholarships.

PENZANCE. — On the 3rd inst. the annual meeting of the Penzance School of Art was held. The report was generally satisfactory both as regards the number of pupils in the school and prizes taken by them in the examination.

SOUTHAMPTON.—The Southampton School of Art, held at the Hartley Institution, has of late so greatly increased the number of its students that the Council of the Institution have already extended the accommodation by the addition of a new wing devoted to the purposes of the school, while it is in contemplation to further enlarge the building by the erection of a school of science, a museum, and an art gallery at the rear. The Report of the Council is very satisfactory. The school was established in 1855 in the basement story of the Victoria Rooms, temporarily taken for the purpose. For more than fifteen years the school has been under the able direction of Mr. W. J. Baker, the master appointed by the Science and Art Department, the present committee of management being the Council of the Hartley Institution. The average attendance of students in the class of late has been over 100. Between the years 1857-70 inclusive, four National medallions have been awarded to this school, besides 90 medals and book prizes, and upwards of 500 other rewards. For brief description of the new building we refer our readers to "Building Intelligence" on this page.

TAUNTON.—The annual distribution of prizes in connection with this school took place on Wednesday evening last, and yesterday (Thursday) to-day, and to-morrow, an exhibition of drawings and other works executed by the pupils was held.

TAUNTON.—The annual meeting of the subscribers and pupils of this institution was held on Wednesday week. It was resolved to extend the school, by adding science classes. This year 83 pupils in the second grade went in for examination, and obtained 37 certificates and 29 prizes: in the third grade 62 pupils went in, and obtained 36 certificates and 6 prizes. From the works sent up to London to be examined, nine were selected for national competition, and one of these secured a Queen's prize. Fourteen pupils among the artisan class reached that stage of excellence which entitles the master to receive payment for them, and one (Clist) had obtained a free scholarship. He and two other artisans had been selected for national competition, and the works of several others had been passed as excellent. Mr. Malet was re-elected president, and the other officers and the committee for the ensuing year were appointed. The certificates and prizes were presented to the successful pupils.

* * *

IMPROVEMENTS IN MARYLEBONE.—At the last meeting of the Marylebone Vestry, the clerk stated that this improvement was being forwarded by the purchase of property. The Metropolitan Board of Works intended commencing work about Christmas next. The committee appointed to consider the Hinde-street improvement were also in communication with the owners of the property required.

Building Intelligence.

CHURCHES AND CHAPELS.

BOW.—A new Roman Catholic Church was opened on Wednesday week at Bow. The building is of considerable size, and is from a design by Mr. Blount, architect, of Montagu-place, Russell-square.

HURWORTH.—All Saints' Church, Hurworth-on-Tees, was reopened on Sunday week, after restoration under the superintendence of Mr. Pritchett, F.R.I.B.A., Darlington. The modern shallow chancel has been pulled down, and a very handsome one of three bays, in accordance with the work of the period of the church's erection (fourteenth century) has been substituted, with aisles on each side of two of the bays. The roof of the new chancel is of the curved brace form, open to the apex, the timbers being all of pitch pine. Under the east window is a new reredos, the tracery being delicately moulded in Caen stone and supported by shafts of Irish marble, while the panels are filled in with mosaic-work by Salviati & Co., from cartoons by the architect. The sedilia and credence tables are moulded and carved in Caen stone, and have pillars of Irish and Devonshire marble. The chancel stalls are of oak. The floor of the chancel is paved with tesseræ and encaustic tiles. The ancient pillars of the nave have been stripped of their plaster, and a new roof of the original high pitch has been constructed. The general contractor was Mr. G. Gradon, of Durham, who sublet the work in branches to various local tradesmen.

LAUNCESTON.—A new Wesleyan Chapel at Launceston was opened on Friday last. The building, which is situated on the north side of the Castle, a little to the west of S. Mary Magdalene Church, is Geometrical Gothic in style, and consists of nave, side aisles, transepts (with organ chamber in one of them), and a small apsidal chancel. At the north-west angle is a tower and spire, which rise to a height of 110ft. Accommodation is provided for 700 persons in open pews of pitch pine, and there is a small gallery for children at the north end. The walls are of local stone, Bath stone, Portland stone, and granite, and the angles of the spire are of wrought limestone. The carving, which is conventional, has been executed by Mr. Harry Hems, of Exeter. The general contractors were Messrs. Blatchford, of Tavistock, and the brass communion rails, &c., are by Hart, Son, Peard, and Co. Haden's apparatus is used for heating. The chancel walls are ultimately to be decorated by Mr. Harris, of Union-street, Plymouth, from the designs of the architects, Messrs. Hine & Norman, of Plymouth. The contract sum exclusive, of some of the fittings, was £3,000.

LIVERPOOL.—A new (Roman) Catholic Mortuary Chapel has been built at Liverpool, chiefly for the use of poor catholics. The style is Gothic. The chapel is a nave 37ft. by 28ft., and will hold 21 coffins. The exterior of the edifice has been executed in Yorkshire stone shoddies, with Gruishil-hill and Longridge stone dressings. Mr. Henry Sumners, of the firm of Culshaw & Sumners, is the architect, and Mr. William Tomkinson, the builder.

SOUTHSEA.—The memorial stone of a new Congregational Church for Southsea, was laid on Thursday last, the 3rd of November, by John Kemp Welsb, Esq., of London, on a fine open site on the common, the Rev. J. Arkell, and other neighbouring clergy, officiating. The church, which will accommodate about 670 worshippers, will consist of nave, lighted by clerestory, east and west aisles, and transepts, and a bold apse and arrangements for organ chamber at the south-east end. The walls will be of Isle of Wight bricks, and hammered flints, with Bath stone dressings, internally with red and white bricks, bands, quoins, and arches—the intermediate spaces being stuccoed. The north entrance, facing the Kent-road, will have a bold portico attached to tower and spire, the foundation of which only will be put in at present. There will be two other entrances on the east side. The design is Early English, of the latter part of the thirteenth century. Schools and vestries adjoin the south side, which were erected two years ago. Mr. Stent, of Warminster, is the architect; Mr. A. Smith, of Portsea, the contractor.

TATTENHALL.—The parish church of Tattenhall, a village eight miles from Chester, was consecrated yesterday (Thursday) after restoration. About twelve months ago the work was commenced under the direction of Mr. Douglas, architect, Chester, the contractor being Mr. G. Woollams, builder, Tattenhall. With the exception of the tower and the side walls, the building was pulled entirely down, and the work of enlargement and restoration commenced. The space formerly occupied by the old chancel was included in the main body of the church and extended in breadth, and a new chancel was built at the eastern end. The church now consists of a tower, a nave with side aisles, an organ chamber and vestry, a lady chapel and chancel. The tower is a square embattled structure of stone, built in the reign of Henry VI. or VII. The nave is divided from each side aisle by four arches springing from pillars. The roof of the nave is supported by four principals, which, as well as the rafters, are of varnished pitch pine. The font and pulpit are both of carved Minera stone. The total cost has been £3,500. The organ chamber and vestry are on the north side of what was formerly the chancel, and form a sort of north transept, while a similar transept, called the lady chapel, is on the south side. The new chancel is raised, and in the centre is set with encaustic tiles.

WINDSOR.—Windsor parish church was reopened on Tuesday week, after having been closed for many months for the purpose of entirely remodelling the interior. The church, which is said to have been one of the ugliest and worst-contrived in England (which is saying a great deal), has become, under the hand of Mr. Teulon, the architect, one of the most pleasing.

WOLVERTON.—There has recently been placed in Holy Trinity Church a new reredos, from a design by Mr. E. Swinfen Harris, jun., architect, of Stony Stratford and London. It is constructed of English oak, with ebonized shafts, and is divided into three compartments, the centre containing, within a cinquefoiled arch, a panel, on which is painted, on a gold ground, angels adoring and censing, in the midst of which rises the altar-cross—of brass on a raised base of oak. The two side arches contain, within cusped arches, the Annunciation, S. Gabriel being on the north side and the Blessed Virgin on the south. Very old mahogany has been used for the panels. The chancel has been decorated with polychromy, the space over the east window containing a wall-painting of the "Adoration of the Lamb." The decorations have been carried out by Messrs. Bell & Almond, of London.

BUILDINGS.

ANSTRUTHER.—The Town Council of Anstruther has decided to erect a new Town-hall, from plans and specifications by Mr. Harris, architect. The cost will be £1,100, or £900 allowing for the materials of the old building.

MATLOCK.—On Thursday week new schools in connection with the parish church were opened. The schools will afford accommodation for about 200 children, and have been erected from a design by Messrs. Hine & Son, architects, Nottingham, the estimated cost being £530.

SOUTHAMPTON.—A new wing has just been erected at the Hartley Institution, Southampton, which is to be devoted to the purposes of the School of Art. The premises devoted to this purpose form an elongated wing at the rear of the Institution, and are lighted mainly by skylights, no side lights being admissible. The rooms in this wing, however, being accessible from a corridor running on one side, a good expedient was adopted. The corridor was covered with a lean-to roof at a lower level than the main building; a clerestory was thus obtained, affording useful side-lights. These clerestory windows, however, are not literally "clear-story," limited to the space between the two roofs, but are carried down the wall dividing the corridor from the schoolrooms, thus giving the students the benefit of borrowed light obtained through the corridor skylights. The vertical sashes are pivot-hung. The construction of the roof of the school is simple and effective. It is constructed with collars, tied together by light iron rods, suspended in the centre by iron rings. Interiorly, the roof is ceiled to the height of the collar. Funnels of zinc capped with cowls (and opening beneath into each compartment with a valve to prevent down draughts) and circular gratings provide a perfect means of exit for the foul air. The school comprises an elementary room, 32ft by 18ft.; master's room, 18ft. by 15ft.; mode ling and painting rooms, each 20ft. by 18ft., besides convenient cloak-rooms, lavatories, &c. The walls will be coloured a neutral grey. The works were carried out from the plans of Mr. Lemon, the borough surveyor, by Messrs. Bull & Sons, of Southampton, at a total cost of about £1,200. In connection with the Hartley Institution, Mr. Lemon is now engaged in preparing plans for a School of Science, Museum, and Art Gallery.

◆

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

TO OUR READERS.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

Letters relating to advertisements and the ordinary business of the Paper should be addressed to the EDITOR, 31, TAVISTOCK STREET, COVENT GARDEN, W.C.

Advertisements for the current week must reach the fice not later than 5 p.m on Thursday.

RECEIVED.—A. J. P., J. H., T. Bros., J. K. P., G. R. & Co., J. C., R. M., J. H. T., J. B., T. & B. Boo e, M. Stark, A. W. M., J. W. T., T. G., R. Mann, M. & Co., J. W. T., J. K., J. W., J. B., T. & B., J. H., & N. T.

E. H. BULMER.—Sketch returned.

J. SMITH.—We can say nothing about another "Sketch-Book" at present. Photographs will not do for the photo-litho. process.

A. J. L.—Sketch will appear; please send description.

W. H. STAFFORD.—We cannot recommend books.

W. J. HALL.—The editor could not undertake to become treasurer in such matters.

IXION.—Your query is an advertisement.

G. LESLIE JAMIESON.—Sorry can't inform you.

EDW. O. BURTON.—About two months longer.

C. S. S. J.—Drawing received, and returned because it is not good enough.

J. ELLRINGHAM.—Drawings received and returned.

W. C. WILLIAMS.—Sketch returned.

GEO. ORD.—Sketch of arcade returned.

W. L. GRANT.—The sketch and description came to hand at the time all right.

JOHN MALCOLM.—The drawing of S. Machar Cathedral has not come to hand.

L. A. KNAPP.—Sketches returned.

J. R. W.—Sketch to hand.

J. W. W.—Not in time.

G. W. GRAINGER.—Longman & Co., Paternoster-row, and Parker, Strand.

◆

Correspondence.

CEILINGS AND THEIR CONSTRUCTION.

(*To the Editor of the* BUILDING NEWS.)

SIR,—It may appear at first sight somewhat absurd that I should trouble you with a communication on the above, but having had a ceiling fail in a building in which great interest had been taken, and having heard recently of many similar instances, I thought the subject worthy of invesigation, involving as it may some of us in trouble and certainly in expense; and so to the point. The ordinary mode of procedure is as follows:—Laths are fixed to the joists very often closely together, and frequently the ends of one row are nailed over the ends of the adjoining row; the course stuff *as well as the fine is run*; *Thames sand* is used, and the plasterer, to get over his work *as quickly and conveniently to himself as possible*, forms his screed across the ceiling with too great a substance of coarse stuff, and consequently unduly weights the laths; add to this foregoing the very short hair which is now only to be obtained, and you are in possession of the causes of failure. I will now suggest what I believe to be a remedy. Though mentioned lastly, yet by no means least in importance is the hair supplied to us. Why is it so short? The answer is, that in these days every effort is made to improve the breed of cattle; therefore the finer the breed the shorter the hair. It is true we have importations of hides with long hair from cold countries, and with coarse shorter hair from the River Plate and Monte Video, but for building purposes this hair is no longer available, and for the following reasons. The tanner sells to a middle man, who assorts the hair and sells the longer to blanket and felt manufacturers; so if we insist upon long hair we must describe goats hair; this in the wet is 3s. 6d. per bushel. Double fir laths should be used instead of the thinner varieties known as single fir. Thames sand makes the stuff too short, and should not be used; sand obtained from roads that have been metalled with ordinary pit gravel is the best. Plasterers should be restrained from overloading ceilings, which should have only the minimum substance upon them; and lastly, coarse stuff should not be run, because the process takes from its strength, and that it does do so is evidenced by the fact that run stuff seldom or never blisters; if run coarse stuff is used it should be for the floated coat only. The pricking up coat should be made after the old manner, that is, chalk lime should be slaked, road sand added, the whole turned up in a heap and allowed to remain for a time, then passed through a screen, and afterwards made up with a large quantity of hair and water, and allowed to remain three or four weeks before use. This will prevent blistering, and in this way sound ceilings may be obtained.—I am, &c,

T. E. KNIGHTLEY.

THE ARCHITECTURAL EXHIBITION.

SIR,—I hear that this deserving, though unsuccessful institution (lately deceased after a lingering and sickly tenure of life at Conduit-street), is proposed to be re-established, on a limited scale, at the Architectural Museum in Tufton-street, Westminster. The proposition is said to have been made to the Council of the Museum, and there is reason for believing that by some of those gentlemen it is favourably entertained, especially as recent alterations in the Museum building have given increased space. If anything is done in the matter, it is to be hoped that it will be successful, not only in itself, but in augmenting the pecuniary resources of the Museum, which, to the discredit of the architectural profession, are very inadequate. With space at their disposal, there can be no reason why the Council of the Museum should not hold such an exhibition of drawings annually as will be of interest to the frequenters of the Museum, for I suppose that the outside public will take no more interest in the proposed exhibition at Tufton-street than they have taken in those held in Conduit-street. It remains to be seen, however, whether the proposed annual international exhibitions at South Kensington will not better effect the object in view, inasmuch as, by their means, the general public will be brought face to face with the designs of the best architects of the day.—I am, &c., DELTA.

Nov. 16.

A SURVEYOR IN 1678.

SIR,—I send herewith an extract, headed "A Surveyor in 1678," which may not be uninteresting.—I am, &c. R. L. BATTERBURY.

The following is an exact copy of an advertisement which appears in a publication dated 1678:—

"James Ward of Langley near Windsor, Surveyor, can perform Artificially the Conveying of Water, either by Channels or Cutting New Rivers (in any places where 'tis possible to be done;) He can also build new, or repair old Bridges over Rivers, and undertakes the new building or reparation of Water-mills, or any water-works; the hanging of Bells, Dyalling, Surveying of Lands, Gaging of Vessels, &c. He has lately invented an Engine for the pumping of Water, which by the assistance of one man (only) will pump two Tun of Water in one Minute (as has been experimented in St. James's Park) and is of excellent use in the Floating or Draining of Grounds, Fen-Lands, Tin-Mines, Ships, also for Brewers use, &c. This Engine will raise water 100 foot high and upwards. He hath exceeded all that hath been done of this kind."

COTTAGE HOSPITAL, LYTHAM.

SIR,—The reply of Dr. Holland to my criticism of the plans of his cottage hospital, admitting some want of understanding between him and Mr. Littler, and the incompleteness of some of the arrangements by reason of the "cutting down" process, to lessen the cost—(a process, alas! to which architects become accustomed)—this, I think, serves to show that the design should scarcely have been admitted to your pages in its unfinished state.

That the inner washhouse door will speedily be walled up I have little doubt; for so long as such a convenient access exists, none but most model attendants will travel through the yard gates, and it must be remembered that washing vapour will pass through the chinks of the doorway.

That in an infirmary of only a dozen beds a special mortuary should be requisite is somewhat surprising, especially, when, to retain it, far more important conveniences to the living inmates are sacrificed "to lessen cost!"

The proposed expedient of obscured glass to the windows overlooking it only proves how one mistake is likely to beget another to cover it. Obscured glass, in a sick room, is most depressing in its effects, and never should be put in an outer window. Miss Florence Nightingale, in her "Notes on Hospitals," third edition, p. 18, referring to the defects in hospital arrangement which retard recovery of the sick, says:—"Second only to fresh air, however, I should be inclined to rank light in importance for the sick. Direct sunlight, not only daylight, is necessary for speedy recovery; except perhaps in certain ophthalmic and a small number of other cases. Instances could be given, almost endless, where dark wards, or in wards with borrowed light, even when thoroughly ventilated, the sick could not by any means be made speedily to recover." Again (p. 19), "Among kindred effects of light, I may mention, from experience, as quite perceptible in promoting recovery, the being able to see out of a window, instead of looking against a dead wall; the bright colour of flowers; the being able to read in bed by the light of a window close to the bed-head." A more practical opinion than hers can scarcely be obtained, and her "Notes," comprising plans of the worst and best hospitals ever built, should be in the hands of every professional man who wants to deal with the subjects.—I am, &c.,

London, Nov. 15. SAMUEL KNIGHT.

MEMORIAL FOUNTAIN, GLASGOW.

SIR,—Nine months ago the Commissioners of the Glasgow Corporation Waterworks advertised for designs for a memorial fountain to commemorate the services of the late Lord-Provost, R. Stewart, Esq.; the cost of the fountain was not to exceed £4,000, and a premium of £50 was to be given for the best design. It would appear that about fifty architects sent in drawings, and for eight months nothing has been known for certain what the Commissioners' intentions were about awarding the premium. The minds of the competitors were, however, set at rest by each receiving from the secretary one of the most impudent notes I ever read, dated Nov. 9, informing them that the Commissioners have agreed that the cost of the fountain shall not exceed £2,000, instead of £4,000, and they are further invited to do their work over again—to send in "modified designs" is their pleasant way of stating it; but the meanness of the affair lies in this—that they do not intend awarding the premium already wrought for by the man who has sent in the best design, according to the first invitation, and which I hold they are legally and morally bound to do. My object in writing you now is, first, to call attention to the rascality of this; and, in the second place, to call on the competing architects to insist on the first competition being decided and the premium paid as promised before the second one goes on.

I hope it is quite unnecessary to say that no architect who has the honour of his profession at heart will so far demean himself as to take any notice of this second call for new designs till the present competition be decided.—I am, Sir, &c.

A COMPETITOR.

QUANTITY SURVEYING.

SIR,—I have read your correspondent "Quantity Surveyor's" letter, and can't say I see he has much to complain about; he only appears to have made a bad speculation.

I could wish all architects were agreed in this question of quantities—(1) not to take them out themselves, but always to employ a quantity surveyor; (2) to inform their clients of the advantages of having the quantities taken out, and the price they would have to pay for these advantages; and (3) not to have them supplied unless their client was willing to pay the quantity surveyor himself, or through the architect, as was preferred. To have quantities taken out without a client's knowledge, and the expense of doing so added by the contractor to his tender and then refunded to the architect, seems to me little short of fraud. Moreover, it is very desirable for the architect to keep himself aloof from any receipts of money from the contractor; it is *liable* to misconstruction.—I am, Sir, &c.

F. R. N. H.

MR. BURGES'S CABINET.

Sir,—It may well be said that you have rendered a considerable service, not only by your illustration, but by your clear explanation of Mr. Burges's cabinet, which goes far towards making it understood by those who have not seen or cannot see it. There are many points about this deserving of notice. It is the work of an architect participating with the workman, as the architect of old did, and in the spirit that many of the men of our day are doing. It is true the mason labours for the architect, but this latter is not brought into contact with the stonesetter, but in a subject like this cabinet all must work together.

The choice of the style has admitted of the play of fancy which is shown in the treatment, and which, while it gives scope to the designer, invites attention from the painter, the whole being consonant with mediæval precedent and treatment.—I am, Sir, &c., H. C.

ROYAL ACADEMY OF ARTS.

Sir,—Questions respecting the admission of architectural students to the Royal Academy and the proposed new courses of study there are so constantly being made in the professional journals, that I should feel obliged if you could insert the enclosed "Instructions for the Admission of Students." As regards the proposed new course of study, I will take the earliest opportunity of communicating it to you so soon as the Council of the Royal Academy may have decided on it.—I am, Sir, &c.

R. Phene Spiers,
Master of the Architectural School.

22, Old Burlington-street, W.,
Nov. 12.

Instructions for Admission of Students to the Royal Academy of Arts.

Each candidate to be a student in architecture shall present to the Council a certificate from an architect-member of the Royal Academy, of the Royal Institute of British Architects, or of any other public institution for teaching art and science, certifying that the applicant has followed up the study of architecture and architectural drawing, and has acquired a reasonable degree of proficiency in the same. The applicant shall further submit to the Council three drawings (not necessarily made for the occasion), to consist of a plan and elevation of some building, and a drawing of ornament from the cast; such drawings being declared by him in writing to have been wholly executed by him, and the same being attested by the person recommending him, to the best of his knowledge and belief. If such certificate and drawings are approved by the Council, the candidate shall be required to make, in the Academy, such drawings or designs as may be required—the subjects to be determined by the Council; which drawings, together with the certificate before referred to, shall be laid before the Council; and if approved, the candidate will be admitted as student for seven years, in like manner as other students.

Those who have been unsuccessful in their first endeavours can renew their application at any subsequent period by again going through the prescribed forms.

All instruction in the Academy is gratuitous, the student providing his own materials.

Letters and packages from the country must be addressed, prepaid, to the Registrar, Royal Academy of Arts, Burlington House. Persons resident in London or its vicinity must apply personally.

Lectures, to which probationers and students have access, are given on

Architecture ...	By G. Gilbert Scott, Esq., R.A.
Sculpture	By Henry Weekes, Esq., R.A.
Painting	By Charles West Cope, Esq., R.A.
Anatomy	By Richard Partridge, Esq.
Perspective ...	By Henry Alexander Bowler.

Master of the Architectural School, R. Phené Spiers.

The library, containing a very valuable collection of works of art and architecture, is open to all students on Mondays from 10.0 a.m., 3.0 p.m., and 4.0 p.m. to 5.0 p.m.; and on Tuesdays and Thursdays from 5.0 to 8.0 p.m.

LUDGATE-HILL.

Sir,—The public has viewed the recent improvements on Ludgate-hill towards widening the thoroughfare on the south side throughout with much satisfaction, as the present roadway is inconveniently narrow, and vehicles can seldom proceed through it in the busy time of the day except at a funeral pace owing to the crush of the traffic. For many months a small plot of ground at the corner of Ludgate-hill and S. Paul's Churchyard has remained empty, "hoarded up," where a house formerly stood, and everybody has been expecting it daily to be thrown into the thoroughfare; but what is the general surprise now to see that notice-boards are placed up inviting tenders to be made forthwith for taking building leases of it. Now this plot is in the direct line of the improvement, and to build on it would only necessitate an increased expense of compensation and pulling down again in a short time. Such an extraordinary piece of jobbery or blindness requires the interference of the public press. I hope you will allow the light of the Building News to be thrown on this attempted deed of darkness.—I am, Sir, &c.,

Nov. 14. Surveyor.

◆

The Albert Bridge, to span the Thames from the south-west corner of Battersea Park to Cadogan Pier, Chelsea, is to be completed. For about four years the piles of this bridge have disfigured the river.

Intercommunication.

◆

QUESTIONS.

[2034] INDIA-RUBBER PUSHERS OR KNOBS.—Where can I get them?—Ixion.

[2035] CEMETERY CHAPELS.—I am about to plan cemetery chapels where economy must be studied, and should like, if you could let me know in your next issue, whether there is any act or regulation in force to prevent the two chapels being *under the same roof*, and having but *one* receptacle house and bell *common to both.*—B. A.

[2036] AIR FOR CHAPELS AND SCHOOLROOMS—Will any correspondent kindly let me know how many cubic feet of air should be allowed to each person in a chapel, and also in a schoolroom; what is the *least* amount which can be allowed with a due regard to health?—Aitch Ess.

[2037] FINE BUFF TINTED BRICKS.—Would any correspondent state in what neighbourhood a pressed brick of a fine buff tint can be obtained suitable for the interior lining of public buildings, churches, &c.?—J. P.

REPLIES.

[2017] MOUNTING TRACINGS.—Discovered by Mr. Samuel Hill, an ingenious architect, the following method is commonly known by those in the secret as the "Hill Mounting Art," in truth a good helper over difficulties.—"Put the tracing face downwards on a clean board, paste over till quite saturated (quite without will of its own); take cartridge paper, the stouter the better; lay the paper on the top of the tracing, rub down sharply from corner to corner. Lift paper and tracing (now joined together) from the board; touch up if required with a handkerchief or clean towel; lay clean paper on the face and rub down, say, with an ivory set-square. Slit the edges of the paper at every ½in. or less (as if making paper trimmings for small hams) and leave it to dry. It will dry quite flat, often better than if the paper had been mounted, and the two papers adhere most thoroughly; the trouble of straining paper is avoided, and coloured tracings do not get injured, as they must almost certainly be if laid down in the way described in "H. A. L.'s" reply on page 340 (a very useful method and well described). Note: Apply the "art" for any size up to imperial (30in. by 22in.), with an easy confidence; for double elephant and large sizes be sure to have a strong paper, very perfectly flat, and lay down *very* suddenly. Large tracings are never easy things to mount. Let those who find the "art" most useful call it by its name, and thank the author, as does—James Webster.

[2019] NEO-GREC.—French students may very likely have turned this into the punning nickname "Né au Grec" for the Parisian modes borrowing most of Grecianism, but it is rather beyond a joke to infer thence that the term "should, I believe, be written Né au Grec"! It is just as classical and correctly formed as neophyte, Neapolis, or Neo-Platonic; and as clearly as the latter is taken for post-Christian developments of Platonism so néo-grec as an adjective could only mean relating to Christian Greece. Even if modern or Christian Greece had never originated a peculiar style in architecture, painting or any other art, the term could not, out of the French modists' shops, be taken as the name of a Paris fashion; and in them such application is mere shop slang. As for their success in the line "Ecole" means, I quite agree with him that their academic system kept up till this generation, perhaps even till this day, something of an architectural *art*, where possibly without such system all would have sunk, as here since Wren's time, into the most debased and debasing of businesses. (I deny it the term *trade* which, as originally synonymous with a *craft* or minor *art*, will still retain a certain reflected dignity, and must not be prostituted to any such thing as percentage-paid planning.) Had our neighbours however left it as systemless as ourselves, it is difficult to believe there could have arisen any of the Smirke and Inwood sort of work beyond these isles and America. It is exclusively a thing of Anglo-Saxondom, impossible where there was either less money or more wit; even should any other race be ever idiotic enough (which I much doubt) to take the "designing" of men unable to design how they themselves should be paid, or to have dealings, generation after generation, with so extremely "honourable" a sort of men as think it quite natural that "percentage on the outlay" should be the method. When, however, "Ecole" cites the Bastile Column (of Louis Philippe's time) as "one of the earliest" of what he calls né au grec works, thereby making the French Hellenizing movement begin when ours was ending or ready to receive its deathblow in Smirke's "British Museum," I think he must commit an anachronism. The appreciation of Greek remains had come to us from France, their introducers by publication being not our Stuart and Revett, as he implies, but Leroy, a Frenchman of the last century, while Soufflot was at work on S. Gènevieve, a church not only more antique and Greek in spirit than had been begun till that time, but more so than most of later Paris; and surely the culminating result of the Grecian "rage" in France was the Madeleine, finished a full generation before the column alluded to was begun.—E. L. G.

[2023] LIGHTNING CONDUCTORS.—"E. L. G." would find on page 195 of Sabine's "Electric Telegraph," that to give the same resistance for the same length (iron wire), must have a sectional area *at least seven times* as great as would be required by copper; *ibid*, page 356. Dr. Matthiesen's experiments with the copper of commerce, taking pure copper at 100 conducting power (15·5° Cent.) gave 2. Lake Superior (commercial) = 92·9 at 15·0° Cent.
5. Bright copper wire = 72·2 at 15·7° Cent.
A tall chimney with conductor must without doubt protect the houses around, even granting the utility of gutters, &c. "E. L. G.'s remarks about "vulgar errors" and "percentage yielders," are in bad taste as applied by him.—H. A. L.

[2023] LIGHTNING CONDUCTORS.—In my reply to "H. A. B.," p. 359, an erratum of one letter awkwardly changes the meaning of the last sentence. Instead of "a workhouse that was injured *through* having three conductors," I meant to write "was injured *though* having," &c. The conductors had nothing to do with the injury, none of them being struck. The volume of *Philosophical Transactions* referred to is that for 1782, p 355, and the report is made to the Board of Ordnance, who requested it in these terms:—"Having received information that last summer a stroke of lightning set fire to the poor-house at Heckingham, near Norwich, notwithstanding it was armed with *eight pointed conductors*, we request you will communicate to us such particulars relating to that fact as may have come to your knowledge." To Sir Joseph Banks, P.R.S." There is a roof plan of the whole premises, the main building being H-formed, and several elevations, on as many plates; by which it appears every chimney had conductors, though only four could possibly be struck; but there being no gutters or stack-pipes, the 4 extreme hipped corners were entirely unprotected, and at one of them, the S.E., the damage occurred. It is probable that to this day, out of all buildings encountering lightning strokes uninjured, far more owe their safety to their stack pipes than to special conductors.—E. L. G.

[2029] PITCH PINE FLOORS.—What state would a pitch pine floor be in after plasterers and others had worked upon it during all the necessary work to ceilings, walls, and woodwork, paint, &c., &c., &c.?—W. W.

[2029] PITCH PINE FLOORS.—These are generally specified on rough deal boards, to save the more expensive material, and to hold the pitch pine firm by the crossing of the grain, the rough deal floor forming a good ground for the pitch pine. The whole of the furnishings can also be put up, and the pitch pine floor finished last in the clear of skirtings, architraves, &c., &c. A good pitch pine floor can be laid by increasing the thickness to 1¼in. and putting margins under skirtings, &c., and afterwards laying the pitch pine floor, dowelled and edge-nailed.—R. Phillips, Gainsborough.

[2030] CONCRETE PAVING.—I have a bit of concrete which formed part of a staircase and passage constructed for Cardinal Wolsey, and have seen concrete of the Roman era in Britain.—W. W.

[2033] MOUNTING TRACINGS.—Use Indian corn flour boiled.—H. A. L.

[2033] MOUNTING TRACINGS.—If "Junior" will make a paste of ordinary starch, and let it stand 24 hours before use, he will find it will be both strong and transparent.—Ixion.

◆

WATER SUPPLY AND SANITARY MATTERS.

Falmer.—A large tank has been constructed underneath the bed of Falmer Pond, Sussex, for the purpose of affording a better water supply to this village. The tank will contain 1,000 gallons.

Guildford.—The Guildford Local Board has taken steps for the acquisition of a piece of land in which to sink a well to aid in supplying the town with water. The works will be carried out under the direction of Mr. Peak, the surveyor.

Musselburgh.—The Police Commissioners of Musselburgh have fixed upon the South Esk, near Yorkstone, as the source from which to get a new supply of water. Mr. Buchanan, C.E., Edinburgh, has been appointed to draw up a report in regard to the extent of the supply to be had from that place, the probable expense of bringing the water to Musselburgh, &c.

◆

STATUES, MEMORIALS, ETC.

New Drinking Fountain for Regent's Park.—Following up the step which Miss Burdett Coutts inaugurated some few years since by the presentation and erection in Victoria Park of the beautiful structure known as the Victoria Fountain, she has now made a similar gift to Regent's Park. It is being erected opposite the principal entrance to the Zoological Society's Gardens.

The late Sir James Simpson.—At a meeting of the committee, held in Edinburgh on Monday week, it was stated that the form of the national memorial to the late Sir James Y. Simpson had been agreed upon as follows:—1, a monument and statue in Edinburgh; 2, a marble bust in Westminster Abbey; 3, a hospital in Edinburgh for the diseases of women, constructed on those principles which Sir James so often and so clearly enforced; 4, similar hospitals in London and Dublin, should funds permit. It was stated that £1,950 had been already subscribed.

Torrington.—A new drinking fountain has just been presented to the town of Torrington, North Devon, by the Hon. Mark Rolle. The site is at the lower end of High-street, almost opposite the Market-house. The basement, which is octagonal and about 8½ft. in diameter, is formed of two steps, the lower one of Cornish granite, the upper of a light and compact light grey marble, from Nidderodale, in the North Riding of Yorkshire, near Fountains Abbey. The superstructure is of fine grained weather Bath stone, and dark Derbyshire bars on the marble, the latter forming the basons and their supports. The lower part of this superstructure is a square pedestal with moulded base and capping. The third story is formed on the top cornice by four panels, two of which contain opal clock dials looking north and south. From a group of pinnacles and gablets there arises above these an octagonal crocketed spire, the summit of which is 20ft. from the level of the roadway. Mr. Farleigh was the architect.

◆

LEGAL INTELLIGENCE.

Extraordinary Frauds upon Builders.—John Fordham Apps, a well dressed, middle-aged man, who was described as an agent, was brought before Mr. Dayman, at Hammersmith, for final examination on several charges of fraud. The prisoner was first given into custody by Mr. Thomas Hussey, a builder of Mayfield-place, Kensing ton, for obtaining a cheque for £20 as compensation for an alleged accident which he represented to have occurred to him by falling over some timber in a new street where the prosecutor carried on building works, and breaking his arm. The watchman, however, proved that no timber was lying in the street at the time in question, neither had he heard of any accident. Mr. Samuel Sansom, a builder, in partnership with Mr. Yates, in the Kennington-road, said that in February last the prisoner called at their office, and made a claim upon them for compensation. He stated that he had been out with some friends and had fallen down the cellar of a house which witness and his partner were building, in Shaw-street. Witness said it was impossible, as the cellar was covered over with scaffold-boards. The prisoner persisted in stating that he had, and also said that he had dislocated his shoulder. Witness declined to entertain his application, but in April the prisoner brought an action, which was compromised on witness paying him £30. Mr. Edward R. Rowland, house surgeon of St. George's Hospital, said he remembered the prisoner coming to him, in October last, for a fracture of a a bone in the arm, which he placed in splints. In answer to a question, the witness said he was not sure that the arm was fractured. It was swollen, and the prisoner complained of great pain. Mr. James Charles Ring, a builder at Peckham, said the prisoner called upon him in December last, and made a claim for compensation. He represented that he met with an accident by falling over his timber. He ultimately paid him £10. Mr. M'Clymont, a builder at West Brompton, proved that he had paid the prisoner £15 in September last, as compensation for an alleged accident by falling over a piece of timber on the Redcliffe estate. George Gillam said that in February last he was manager to Mr. Bates, a builder at Woodford. At that time they had works in the Borough. One morning the prisoner called at the works, and said that he had met with an accident by falling over some timber and breaking his arm. He afterwards received a letter from him, in which he stated that he did not wish to make a profit out of the accident. After several interviews, witness paid him £15. Subsequently he saw him mount an omnibus with the aid of his injured arm, and he went to his house for the purpose of congratulating him on his speedy recovery, but he was not at home. The prisoner reserved his defence, and Mr. Dayman committed him for trial on even charges.

IMPORTANT TO JOINERS.—At the Edinburgh Small Debt Court, on Friday last, John Emslie, joiner, sued his late employer, Daniel Weir, Chancelot, Ferry-road, for £1 6s. 6d., being a week's wages to which pursuer said he was entitled in consequence of having been dismissed without warning. Defender stated the pursuer was engaged upon trial, and was dismissed because he did not please. When discharged, pursuer claimed a week's notice. Defender, at the time, said he was not in the habit of giving any warning to workmen, but rather than go to law about the matter he would allow pursuer to work another week. Pursuer, who had been three weeks in defender's employment, denied that he had got liberty to work his warning. Among the witnesses examined were Mr. Paterson, secretary to the Joiners' Assooiation, who stated that the rule in the trade was "a week's notice on either side." A workman, he also remarked, was only bound to be on trial for a week. The Sheriff said the point as to pursuer being on trial was sufficiently disposed of by the fact of his having been in defender's employment for three weeks without his workmanship being objected to. Defender had not sufficient evidence to prove the statement he had made about allowing pursuer to work his warning. Decree was given for pursuer for the sum claimed, with expenses. —James Wilson, joiner, brought an action against Alex. Wilson, builder and house-carpenter, Brandfield-street, for £1 5s. 6d., in lieu of a week's warning. The defence was that defender gave no warning to any of his workmen, and that a placard with the words "No notice given or taken," was placed conspicuously on the door of the workshop. Pursuer said he was three weeks in defender's employment, but had never observed the notice about warning. After hearing evidence, the Sheriff held that defender had sufficiently published the notice, and was not entitled to give pursuer any warning. Absolvitor.

THE CORNISH GRANITE COMPANY. — A petition for a winding-up order was heard on Saturday last, before the Master of the Rolls. The petitioners, three in number, held fifteen shares, upon which they had paid £7 10s., and the like sum remained to be called up. There were 903 shares upon which £451 10s. might be called, which sums, together with the plant of the concern, might probably raise the assets to £500. The debts were said to be about £220, exclusive of debenture claims secured on the quarries of the company. Sir R. Baggallay, Q.C., Mr. Waller, Mr. Lindley, and Mr. J. Napier Higgins supported the petition. Mr. Roxburgh, Q.C., appeared for the company. The contention was that the company was not insolvent, and that a compulsory order would in costs exhaust the assets of the company, and so leave nothing for the creditors. His lordship on Monday morning made the usual winding-up order.

◆

Our Office Table.

SOCIETY OF ARTS.—CANTOR LECTURES.—The first course of Cantor Lectures for the ensuing Session will be "On Artists' Colours and Pigments," by Frederick S. Barff, Esq., M.A., F.C.S., and Fellow of the Cambridge Philosophical Society. It will consist of five lectures, to be delivered on Monday evenings, the 21st and 28th November, and the 5th, 12th, and 19th December, at eight o'clock. These lectures will treat of —The Nature of Colour; Chemistry and Manufacture of Colours and Pigments; Vehicles and Media used in Painting; Fresco and Silicious Painting; Destructive Influences on Colours, &c. The first lecture of this course takes place on Monday evening next.

THE NEW ISLINGTON WORKHOUSE.—The Islington Guardians have at last got possession of their new workhouse at Holloway, but only by main force. Had they not taken possession of the building thus forcibly, it might have been another year or two before they got their building handed over to them. The unseemly disputes which have lasted so long between the contractor and the architect are not yet over; but, according to a local journal, solicitors have been called in both by the guardians and the contractor, with the object of effecting some settlement, and the whole affair will probably end in litigation.

THE SLADE LECTURES AT OXFORD.—The new Slade Professor of Fine Art, Mr. John Ruskin, M.A., Christ Church, has announced a course of lectures on the elementary principles of sculpture, in the theatre of the Museum, Oxford, at two o'clock, on Thursdays and Saturdays, from November 24 to December 10. The following are the days and subjects on which the popular Professor will discourse:—Thursday, November 24, "The Division of Arts." Saturday, November 26, "Imagination." Thursday, December 1, "Likeness." Saturday, December 3, "Structure," Thursday, December 8, "The School of Athens;" and Saturday, December 10, "The School of Florence."

ILLNESS OF MR. GEO. GILBERT SCOTT, R.A.—Mr. Geo. Gilbert Scott, R.A., the celebrated church architect, is now lying dangerously ill at the residence of the Dean of Chester. Mr. Scott was passing through Chester, on his way to Oswestry, several weeks ago, when he was taken ill while making a call at the Deanery. He has not been able to leave the house since, and has been attended there by various members of his family. His illness is said to arise from a complication of bronchitis and disease of the heart. On inquiry yesterday we were glad to learn that he is recovering. Some time, however, will probably elapse before he will be able to attend to his professional duties.

◆

MEETINGS FOR THE ENSUING WEEK.

MONDAY.—*Royal Institute of British Architects.*—Ordinary General Meeting. 8 p.m.
Society of Arts.—(Cantor Lectures.) "On Artists' Colours and Pigments." Lecture I. By F. S. Barff, Esq., M.A. 8 p.m.
TUESDAY.—*Institution of Civil Engineers.*—(1) Discuscussion on Mr. Leslie's paper "On the Water Supply of Paisley." (2) "On the Theory and Details of Construction of Metal and Timber Arches," by M. Jules Gaudard, C. E., of Lausanne. 8 p.m.
WEDNESDAY.—*Society of Arts.*—"On South African Diamonds," by Professor Tennant. 8 p.m.
SATURDAY.—*Associated Arts' Institute.*—"On Vulgarity in Art," by J. M. Capes, Esq., M.A. 8.15 p.m.

◆

Chips.

One of Mr. Warhurst's apparatus for preventing draught and excluding dust and rain has been recently fixed on a door in the Government Patent Office, Southampton-buildings, Chancery-lane, and may be inspected by permission of Mr. Bennett Woodcroft.

A son of Mr. Justice Hannen (and nephew to Mr. Hannen, of the firm of Holland and Hannen, the well-known builders), has been appointed judge of Her Britannic Majesty's Supreme Court at Yokohama.

The election of a chairman for the Metropolitan Board of Works, in the room of the late Sir John Thwaites, takes place to-day (Friday). The term of office is restricted to one year.

The vestry of S. George's, Hanover-square, has recently acquired a 17 ton steam road-roller, and its working is said to be very satisfactory.

M. Rafael de Benjumea, who for many years was attached to the Spanish Court as a painter of History, has arrived in this country.

The new Post-office buildings in New York are progressing rapidly towards completion.

It has been decided to enlarge the national school buildings at Littlehampton, Sussex.

The Roman Catholics of Gateshead have selected plans for the erection of schools in the town to accommodate 1,000 children.

The South London Tramway Company has commenced a service of workmen's trains to and from Brixton and Westminster Bridge-road, the fare for the whole distance (3 miles) being only 1d. each journey. The earliest train starts at ¼ past 5 a.m.

Mr. Fahey, jun., has been elected an Associate of the Institute of Painters in Water Colours.

The committee organised for arranging the presentation of a testimonial to the late Lord Mayor have commissioned Mr. J. Edgar Williams to paint Mr. Besley's portrait.

Timber Trade Review.

◆

Prices at yesterday's sale:—Pitch pine, per Petg. std., 12*l* 10*s*; Gefle mixed yellow, 10*l* to 12*l*; do. 3rd yellow, 8*l* 10*s* to 9*l* 15*s*; do. 4th yellow, 7*l* 5*s* to 8*l* 10*s*; Husum mixed yellow, 9*l* 15*s* to 10*l*; do. 3rd yellow, 7*l* 10*s* to 9*l*; Uleaborg mixed yellow, 8*l* 5*s* to 9*l* 10*s*; do. 3rd yellow, 6*l* 15*s* to 7*l* 5*s*; Sundswall mixed yellow, 9*l* 10*s* to 10*l*; do. 3rd yellow, 8*l* 10*s* to 8*l* 15*s*; Stockviken mixed yellow, 7*l* 5*s* to 8*l* 5*s*; do. 3rd yellow, 8*l* 5*s*; do. 4th yellow, 7*l* 15*s*; do. 3rd white, 6*l* 10*s* to 7*l* 10*s*; do. mixed white, 7*l* to 8*l*; Soderham 1st yellow, 7*l* 10*s* to 10*l* 5*s*; do. 3rd yellow, 7*l* 5*s* to 8*l* 5*s*; do. white, 6*l* 15*s* to 8*l* 10*s*; Swartwick mixed yellow, 9*l* 15*s*; do. 3rd yellow, 7*l* 15*s* to 9*l*.

Quebec 1st bright, 12ft 3 × 11, 18*l* 15*s* to 19*l* 5*s*; do. 1st floated, 16*l*; do. 2nd bright, 13*l*; do. 2nd floated, 12*l*; do. 2nd dry floated, 12*l* 10*s*; do 3rd bright, 8*l* 15*s* to 9*l* 5*s*; do. 3rd dry floated, 8*l* 15*s* to 9*l* 10*s*; Petersburg 1st yellow, 12*l* 5*s*; do 1st white, 8*l* to 9*l* 15*s*; Onega 1st yellow, 14*l*; Kramfors mixed yellow, 9*l*; do. 3rd white, 7*l* 10*s* to 8*l*; do. 3rd yellow, 8*l* 5*s* to 9*l*; do. 4th yellow, 7*l* 15*s* to 8*l* 10*s*; Jacobstadt 1st yellow, 7*l* 5*s* to 7*l* 10*s*; do. white, 6*l* 10*s*; Hernosand mixed yellow, 8*l* 10*s* to 9*l* 10*s*; do. 3rd yellow, 7*l* 10s to 8*l* 5s.

Christiana 1st white, per 120 12ft., 3 × 2, 19*l*; do. 2nd yellow, 16*l* 5*s*: Laurvig mixed white, 12*l* 10*s*; Miramichi spruce, 11*l* 15*s* to 13*l* 15*s*; Quebec 1st spruce, 16*l* to 18*l*; do. 2nd spruce, 12*l* 10*s*. to 14*l*; Rimenski 1st spruce, 15*l* to 15*l* 10*s*; Trois Pistoles 1st spruce, 12*l* 10*s* to 15*l* 10*s*; do. 2nd spruce, 13*l* 5*s* to 14*l*.

Dram 3rd yellow, 5*l* 10*s* to 6*l* 5*s* per 120 12, 2½ × 6½; do. 3rd white, 5*l* to 5*l* 5*s*; Dantzig crown fir timber, 4*l* per load; do. common middling, 2*l* 12*s* to 3*l*; do. best middling, 3*l* 12*s* 6*d* to 3*l* 15*s*; Quebec oak, 6*l* 5*s* to 6*l* 15*s*; do birch, 3*l* to 3*l* 2*s* 6*d*; do. elm, 5*l*; do. walnut, 2*s* 4*d* to 2*s* 7*d* per foot cube; do. wainscot logs, 2*l* 15*s* per 18ft. cube; hickory, 5*l* 10*s* per load; ash, 4*l* 2*s* 6*d*; red pine, 3*l* 12*s* 6*d*; yellow pine, 3*l* 17*s* 6*d* to 4*l*; do. Waney, 3*l* 12*s* 6*d* to 3*l* 15*s*; Sandswall fir, 2*l* 11*s* to 2*l* 13*s*; Skelleftea yellow balks, 1*l* 16*s* to 1*l* 18*s*; Fredrickstadt 1st yellow prepared flooring, 1in., 10*s* to 10*s* 6*d* per square; do. whitewood, 1in., 9*s* 3*d* to 9*s* 6*d*; Christiana 2nd yellow, 1in., 8*s* to 8*s* 6*d*; do. white, 1in., 8*s*.

TIMBER MERCHANTS AND SHIPOWNERS.—At the meeting of the Shoreham Chamber of Commerce, held a few days ago at Brighton, the hon. sec. read a communication from Mr. J. E. Butt, of Littlehampton, on a subject of importance to timber merchants and shipowners. It appeared that Mr. Butt had brought an action in the Arundel County-court against the captain of a vessel for breach of contract. He had chartered the vessel to convey a full and complete cargo of deals at so much per standard. She brought 90 standards, but the captain also brought on his own account, in the hold, firewood to the amount of five standards, and sold it to a customer of Mr. Butt's. The latter considered this to be breach of contract, and therefore brought an action against the captain. At the trial, the Judge told Mr. Butt that he had put himself out of Court by paying the whole of the freight, instead of deducting his claim from it. Against this decision Mr. Butt had given notice of appeal, and now brought the case before the Chamber to see if they could give him any advice or furnish him with any precedents in the matter. The unanimous opinion was that the Judge's ruling was wrong, as it has always been held that the payment of freight could not be stopped on any account.

◆

LATEST PRICES OF MATERIALS USED IN CONSTRUCTION.

TIMBER.

Teak ....load	£12	10	13	10	Finland	£7	0	£8	0
Quebec, red pine	3	15	4	15	Memel...............	0	0	0	0
,, yellow pine..	4	0	4	10	Gothenburg, yellow	8	10	10	10
St. John N.B. yellow	0	0	0	0	,, white	8	0	8	10
Quebec Oak, white..	6	5	6	10	Gefle, yellow........	10	10	12	10
,, birch........	3	15	5	0	Soderham	8	10	12	0
,, elm	4	5	5	5	Christiania, per C., 12 ft. by 3 by 9 in.				
Dantzic oak	5	5	6	15					
,, fir	2	12	4	10	yellow	10	0	12	10
Memel fir	2	15	4	0	Flooring boards, per				
Riga	3	3	3	7	sq. of 1in., first yel	7	6	10	6
Swedish	2	7	2	18	First white........	7	0	9	6
Masts, Quebec red pine	4	0	5	5	Second qualities	6	0	7	0
,, yellow pine..	4	0	5	5	PUMICE STONE pr ton	6	0	8	0
Lathwood, Dantzic, fm	3	0	5	0	OILS, &c.				
,, St. Petersburg	4	0	6	0	Seal, pale....per tun	35	10	0	0
Deals, pr C., 12 ft. by 3					Sperm body	79	0	80	0
by 9 in.,					Cod	36	10	0	0
Quebec, white spruce	12	0	17	0	Whale, Sth. Sea, pale	36	0	0	0
St. John, white spruce	12	0	14	0	Olive, Gallipoli......	47	15	43	0
Yellow pine, per reduced C.					Cocoanut, Cochin, ton	43	10	0	0
					Palm, fine	39	0	39	10
Canada, 1st quality.	18	0	19	10	Linseed	29	15	40	0
2nd do......	12	15	13	10	Rapeseed, Eng. pale..	46	0	46	10
Archangel, yellow ..	11	10	12	10	Cottonseed..........	28	10	34	10
St. Petersburg, yel...	12	0	13	0					

METALS.

LEAD —

Pig, Foreign	per ton	£17	10	0	£0	0	0
,, English W.B.	do	20	0	0	20	5	0
,, Lead Co.	do	19	5	0	20	0	0
,, Other brands	do	18	0	0	18	5	0
Sheet Milled.........................	do	19	5	0	20	0	0
Shot, Patent	do	21	0	0	0	0	0
Red or Minium	do	19	15	0	20	10	0
Litharge, W.B.	do	0	0	0	0	0	0
White Dry	do	27	0	0	0	0	0
,, ground in oil	do	0	0	0	0	0	0

COPPER:—

British—Cake and Ingot	per ton	£67	0	0	67	10	0
Best Selected	do	68	10	0	69	0	0
Sheet	do	72	0	0	73	0	0
Bottoms	do	75	0	0	0	0	0
Australian	do	68	10	0	71	10	0
Spanish Cake	do	0	0	0	0	0	0
Chili Bars, cash	do	64	10	0	64	10	0
,, Refined ingot..................	do	66	0	0	69	0	0
Yellow Metal	per lb	0	0	6¼	0	0	7

IRON:—

Pig in Scotland, cash..............	per ton	£2	11	0	0		
Welsh Bar, in London	do	7	2	6	7	10	
,, Wales..............	do	6	10	0	6	12	6
Staffordshire.........................	do	7	10	0	8	0	0
Rail, in Wales	do	7	0	0	7	10	0
Sheets, single in London..........	do	9	10	0	10	5	0
Hoops, first quality	do	8	10	0	9	5	0
Nail Rod	do	7	5	0	7	15	0
Swedish	do		10	0	9	15	0

Trade News.

WAGES MOVEMENT.

EDINBURGH.—The strike in the building trade in Edinburgh and Leith still continues, and from the aspect of affairs at present, as between employers and men, it seems likely to last for some time. There are upwards of 400 men out on strike in Edinburgh, and 100 in Leith—the cause being that the master masons have reduced the standard rate of pay from 6½d. to 6d. per hour. Two builders in Edinburgh who have pressing contracts on hand gave in to the demands of the men, and took them back at the old rate of 6½d. per hour, and it is just possible that a compromise may be made by other employers, who will offer the rate of 6¼d. per hour. It is generally understood that, had the reduction originally proposed been only a farthing per hour, the Masons' Association would not have made any strenuous opposition to it, as trade is at present dull, and broken weather has set in. Even yet we believe the men are willing to submit their case to arbitration. The operatives' society is, however, reported to be very strong just now — the number on the roll throughout Scotland being 8,000—of which number there is nearly 1,500 in Edinburgh. The members subscribe 3d. per week, and it is said that the funds in hand amount to £6,000. With this sum at their back, and with the support of the whole society, the Edinburgh operatives believe that they will compel the masters to accede to their terms. Each operative on strike receives 10s. per week; and in 1861, when the Edinburgh masons struck on the nine hours movement, they held out for three months, and gained their point, at a cost of between £5,000 and £6,0 0. A number of the masons recently employed in Edinburgh have left the city to seek employment elsewhere, rather than submit to the reduction proposed by the masters. A meeting of masters and men on strike was held on Saturday evening, in order to see whether, if possible, a settlement of the dispute could not be affected. Nothing, however, came of the interview; but arrangements were made to hold another conference some time this week, and discuss the question at issue.

◆

TENDERS.

BETHNAL-GREEN.—For the erection of addition to the Bethnal-green Workhouse, for the guardians of Bethnal-green. William Mundy, architect :—

Liddiard	£6374
George	5647
Markett & Thurgood	5640
Hearle	5575
Nightingale	5555
Ennor	5485
Blackmore & Morley	5480
Perry	5429
Wigmore	5357
Brown & Sons	5299
Tully	5296
Morter	5223
King & Son	5159
Wood	5150
Capps & Ritso	5135
Eaton & Chapman	5109
Elease	5094
Langmead & Wray	4980
Hill, Keddell, & Waldram	4975
Hurst	4969
Wright Brothers	4940
Croaker (accepted)	4617

BIRKENHEAD.—For the erection of villa residences at Claughton, Birkenhead. Mr. Lewis Hornblower, architect. Quantities by Mr. George Northcroft, surveyor, Liverpool :—

Walker	£4765
Nicholson & Ayre	4594
Fisher	4566
Haigh & Co	4533
Blakeley	4450
Industrial Building Co.	4385
Urmsom	4275
Forde (accepted)	4017

CITY.—For part of excavators' work for nine warehouses, Monkwell-street. Mr. Herbert Ford, architect :—

Peacock	£527	0	0
Maycock	369	12	0
Hobman	339	17	8
Jay	306	0	8
Slater	289	1	0
Wilson	288	15	0
Pooley	285	0	0
Hopkins	280	11	0
Perkins	272	5	4
Portlock	256	7	0
Reddin	245	12	8
Crane (accepted)	241	19	5

CONINGSBY, LINCOLNSHIRE. — For the restoration of Coningsby Church, Lincolnshire. Messrs. T. C. Hine & Son, Nottingham, architects :—

	Nave and Aisles.	Chancel.
Hodson & Facon	£1562	£904
Stevenson & Weston	1417	853
Worth	1314	854
Pattinson	1343	998
Hasmiss	1277	926
C. & W. B. Millson	1174	825
White & Wood	1109	825
Otter & Binns	1128	787
Walter & Hensman	1140	835
Belton	1106	739
Thompson	1066	762
Otter & Elsey	1115	690
Knight	979	765
Johnson	1001	710
Young (accepted)	995	645

ELLAND, YORKSHIRE.—For erection of a villa residence. Mr. T. W. Helliwell, architect, Brighouse. Accepted tenders :—

Mason's work, L. & W. Crowther, Rastrick.

Carpenter's and joiner's ditto, Halliwell & Uttley, Brighouse.

Plumber's and glazier's ditto, Joseph Lawson, Brighouse.

Plasterer's ditto, Eli Morton, Huddersfield.

Slater's ditto, Hill & Nelson, Bradford.

Painter's ditto, Hirst & Barraclough, Brighouse.

GRAVESEND.—For the erection of offices in King-street, Gravesend, for Francis Southgate, Esq. Mr. Thos. Chas. Sorby, architect, 27, Brunswick-square, W.C. Quantities supplied by Mr. Jno. Scott, 8, Northumberland-street, Strand, W.C. :—

Jno. Gould (Gravesend)	£1249	0
G. & C. Cobham (Gravesend)	1230	0
Thos. Blake (Gravesend)	1137	10
Hill & Sons (London)	1086	0

LIVERPOOL.—For the United Methodist Free Church and Schools, Wellington-road, Toxeth Park, Liverpool. Mr. W. J. Mason, architect. Quantities by Mr. Geo. Northcroft, Surveyor, Liverpool :—

Forde	£3398	5	0
Potter	3320	0	0
Tomkinson	3050	0	0
Bateman	2999	0	0
Cheetham	2998	0	0
Haigh & Co.	2997	0	0
Rome	2964	0	0
Hargreaves & Grindrod	2955	0	0
Industrial Building Co.	2900	0	0
Nicholson & Ayre	2889	0	0
Urmson	2866	0	0
Bridge (accepted)	2770	0	0

LONDON.—For additions to workhouse in Poland-street, Oxford-street, for the guardians of Westminster Union. Mr. W. Lee, architect. Quantities supplied by Messrs. Linsdell & Giffard :—

Saul	£15039
Foxley	14960
Howard	14850
Mann	14585
Yates	14548
Henshaw	14143
Crockett	13960
Lathey Bros.	13923
Hart	13850
Eaton & Chapman	13810
Nightingale	13622
Scrivener & White	13565
Higgs	13541
Markwick & Thurgood	13452
F. & F. J. Wood	13350
Wright Bros. & Goodchild	12800
Hill, Keddell & Waldram (accepted)	12773

NORFOLK.—For the restoration of Hingham Church, Norfolk. First contract. Mr. James K. Colling, architect :—

Luff	£2198
Spaul	1999
Brown	1836
Hubbard	1742
Tooley	1680
Cornish & Lacy (accepted)	1647

Architect's estimate £1700.

SELHURST.—For completing houses for Mr. Evans :—

Wren, Selhurst (accepted)	£1252

◆

CONTRACTS OPEN FOR BUILDING ESTIMATES.

DOMINION OF CANADA. — INTER-COLONIAL RAILWAY. Nov. 21.—For the supply of 40,000 tons of Bessemer steel rails, to be delivered in 1871 and 1872, with the necessary quantity of fish-plates and bolts and nuts. Messrs. Morton, Rose, and Co., Bartholomew House, Bartholomew-lane, E.C., London. Messrs. A. Walsh, E. B. Chandler, C. J. Brydges, A. W. McLelan, Commissioners, Ottawa Canada.

DUBLIN, Nov. 29.—For the erection of premises in the town of Clonakilty, co. Cork, for the Bank of Ireland, according to plans and specifications to be seen at their branch office in Cork and in Clonakilty, from Monday, the 7th, to Tuesday, the 28th November instant, on which latter day all tenders should be with Mr. John G. Armstrong, Assistant Secretary, Bank of Ireland, Dublin. The architect, Mr. S. Symes, 58, Lower Dominick-street, Dublin, will give any further information needed. The directors do not bind themselves to accept the lowest or any of the tenders.

STOURBRIDGE, Nov. 30.—For the erection and completion of a vicarage house, offices, and outbuildings, at Kinver, near Stourbridge. The Rev. John Hodgson, Kinver.

EXETER, Dec. 2.—The Local Board of Health for the district of S. Thomas the Apostle are desirous of receiving tenders for filling up the excavation adjoining their sewage depot, in S. Thomas, and raising the land to the height shown by stakes fixed therein. A plan and specification may be seen at the office of Mr. Edward Ellis, surveyor, Musgrave's-alley, Exeter, of whom further information can be obtained.

WALSOKEN, Dec. 9.—For the erection of farm buildings on the estate of the Rev. James William Bellamy, in Walsoken, near to the Smeeth-road Station, on the Great Eastern Railway. Wm. Adams, architect and surveyor, Wisbech.

STOCKTON, Dec. 17.—For the Coatham Victoria Hotel. Charles J. Adams, F.R.I.B.A., architect, Stockton-on-Tees.

PORTSMOUTH LOCAL GOVERNMENT BOARD, Dec. 1.—For supplying fifty gas lamp columns. S. J. Elliott, clerk to the board.

LEEDS, Dec. 7.—For the various works required in the erection of premises in Park-row. Geo. Corson, architect, 5, South Parade, Leeds.

ILKLEY, Nov. 21—For the erection of four houses. J. Atkinson, architect, Ilkley.

ILKLEY, Nov. 22.—For the erection of an eighteen-roomed dwelling house and appurtenances. Thomas Marshall, architect, 20, Queen-street, Leeds.

PARK GATE IRON COMPANY, LIMITED, Nov. 22.—For the excavation and fire brick work required for two or more blast furnaces, with the required gas flues for the same, at Park Gate Iron Works, near Rotherham. The Park Gate Iron Company, Limited, Park Gate Iron Works, near Rotherham.

HARROGATE IMPROVEMENT COMMISSIONERS AND LOCAL BOARD OF HEALTH, Nov. 23.—For the construction of macadamised roads in Montpelier-street, within the district, of the Local Board; also for kerbing and flagging the same. A. Malcolm Bateson, clerk, Harrogate.

BATH STONE OF BEST QUALITY.

RANDELL, SAUNDERS, and COMPANY, LIMITED. Quarrymen and Stone Merchants, Bath. List of Prices at the Quarries and Depots; also cost for Transit to any part of the United Kingdom, furnished on application.

BATH STONE OFFICE,
Corsham, Wilts.
[ADVT.]

◆

BANKRUPTS.

(TO SURRENDER IN LONDON).

Matthew Tombleson, Walthamstow, builder, November 23, at 2.

(TO SURRENDER IN THE COUNTRY).

Alfred Davies, Worcester, carpenter, Nov. 28, at Worcester.—William Samson, Ponder's End, builder, Nov 22, at Edmonton.

BANKRUPTCY ANNULLED.

Matthew Carter, Hartlepool, builder, Oct. 25.

PUBLIC EXAMINATIONS.—ACT, 1869.

Dec. 8, G. Short, Warrington, builder.—Dec. 7, C. Walter, Shardeloes-road, New-cross, builder.

DECLARATIONS OF DIVIDENDS.

J. Barker, Warrington, mason.—L. Taylor, Tunbridge Wells, plumber, div. 8s.—G. S. Denton, Osbournby, plumber, div. 1¼d.—E. J. Sowter, Derby, timber merchant, div. 5d.

DIVIDEND MEETINGS.

Nov. 26, W. Parsons, College-terrace, Bond-street, Chelsea, plumber.—Nov. 23, A. Harris, Thame, ironmonger.—Nov. 29, T. Sibson, Leicester, timber merchant.—Nov. 28, J. H. Fawcett, Huddersfield, glazier and gasfitter.

SCOTCH SEQUESTRATIONS.

Daniel Lowe, Glasgow, painter, Nov. 21, at 12.—James Bell, Glasgow, joiner, Nov. 16, at 12.

◆

PARTNERSHIPS DISSOLVED.

Knouse & Millard, Pimlico, builders.—Sylvester and Hopkins, Newcastle-under-Lyme, engineers.—Clarke & Groome, Liverpool, steam sawyers.—Newbery & Co., Cardiff, iron founders.—Martin & Co., Aldershot, builders and contractors.—Shanks & Lord, Sharples, joiners.—J. & G. Perkins, Leicester, builders.—Parker & Millard, Pimlico builders.—Bradshaw & Leacock, Southsea, asphalters.

BREAKFAST.—EPPS'S COCOA.—GRATEFUL AND COMFORTING.—The very agreeable character of this preparation has rendered it a general favourite. The *Civil Service Gazette* remarks :—"By a thorough knowledge of the natural laws which govern the operations of digestion and nutrition, and by a careful application of the fine properties of well-selected cocoa, Mr. Epps has provided our breakfast tables with a delicately flavoured beverage which may save us many heavy doctors' bills." Each packet is labelled—JAMES EPPS & CO., Homœopathic Chemists, London.

THE
ENGLISH MECHANIC
AND WORLD OF SCIENCE.
WITH WHICH ARE INCORPORATED
"The Mechanic," "Scientific Opinion," and "The British and Foreign Mechanic."
PRICE TWOPENCE WEEKLY.
Vol. XI. now Ready, price 7s.; post free, 8s. 8d.

OFFICE—31, TAVISTOCK-STREET, COVENT-GARDEN.
And all Booksellers and Newsagents.

ARCHITECTURAL PHOTOGRAPHS & BOOKS.

A Set of 8 PHOTOGRAPHS (mounted in cardboard), from the o ginal drawings of the PRIZE DESIGN of the MANCHESTE TOWN HALL competition. Size of the photograph 12 by 10. Pric £2 2s.

A LITHOGRAPH of the HOTEL DE VILLE AT HAMBURGH (the prize design), by G. G. SCOTT, Esq., Architect. £1 1s.

A PHOTOGRAPH (mounted on cardboard) of the ASSIZE COURTS AT MANCHESTER by A. WATERHOUSE, Esq. Architect. Size of the photograph 26 by 21. £1 1s.

The above, being very suggestive designs, would be useful to all first-class offices.

EXECUTED EXAMPLES OF CHURCHES, CHAPELS, MANSIONS, and VILLAS, to be completed in Five Divisions, at 10s. 6d. each. The first and second divisions only just out.

These examples are by different architects, and they contain the actual cost of each building, and the materials used, together with the ground and chamber plans.

CHURCHES and CHAPELS erected by G. BIDLAKE, Esq., Architect, Wolverhampton, with the plans and the actual cost of each erection, together with the best arrangements of the seats, both in the gallery and the ground floor. 12s. 6d.

This little book is quite a favourite with the profession on account of the well-known ability of the architect in designing and carrying out the different Nonconformist Chapels and Schools Houses, &c., in different parts of England.

The above Photographs and Books can be had from the Publisher, S. BIRBECK, Bookseller, 10, Church-street, Lozells-road, Birmingham.

ARCHITECTURAL DRAWINGS by WILLIAM BURGES. This work will be ready for publication in about six weeks' time. The subscription list, in which there remain fifty vacancies, will go to press at the end of this month. The work contains 75 plates of architectural details, roofs, masonry, &c, besides four plates of costume. Price of the work bound, £3 10s. Subscribers' names will be received by Mr. W. Burges, 15, Buckingham-street, Strand, W.C.

CONCRETE BUILDINGS — Much stronger, more durable, than walls of brick, at half their cost. Twenty-four Plates of Plans, Elevations, Sections, and Estimates of Dwellings, 8vo., 64 stamps. Also an Illustrated 4to. Pamphlet, 14, stamps; also an 8vo. Illustrated ditto, 7 stamps.—Mr. P. THOMPSON, Hydn villa, Harrow.

THE BUILDING NEWS.

LONDON, FRIDAY, NOVEMBER 25, 1870.

ITALY AT KENSINGTON.

(*Continued from page* 327.)

SUPERB masses of modern Roman plate are mingled with the earlier examples of Italian art and fancy in the Museum of South Kensington. They prove that the people have not lost their cunning, although they display more of manufacture than of that loving spirit which induced the artists of old days to spend years upon a cup, a goblet, a frame, or a cross. A similar observation will apply to the display of new Italian mosaic, Roman, Venetian, and Florentine. It is rich in colour, and the workmanship is perfect; yet we confess to preferring the quainter models. Still, one of these inlaid tables—white and purple, green and ruby, glowing with peaches and plums, flowers and leaves, in natural tints of stone, set out in a verandah, with a few real peaches, and two—only two—glasses of Venetian crystal, and a flagon filled from Sicily, would possess many attractions, especially if you could summon Venetia herself from her picture, warm with Italian worship, and place her, opposite you, in that satinwood chair from Milan. We must not indulge, however; but, once more passing the gates, as immortal as bronze can be, stop before the Pisan gate—the Porta di San Rarieri, executed by Bonnano. This is a marvellous work, very ancient, and authentically dated as from 1180. The sculptor bestowed years of toil and thought upon its elaboration. It is, in truth, a sacred epic, depicting the Life of Our Lord—the Star in the East; the Manger blessed by being the first cradle of Jesus; the Magian worship; the Mount; the Supper; the Garden of Gethsemane; Calvary; the Tomb; the Resurrection; and the Re-appearance. All seems so simple and pious, yet so vigorous and earnest, that we know at once that the man who moulded these scenes was as full of Christian faith as ever was priest at altar. The true Mediæval genius is there, grandly illustrated. Very different, but still curious and beautiful, is a Siennese cabinet in walnutwood, of the sixteenth-century style, exceedingly dainty, and such as might be imagined in any lady's chamber. Still, it was not in this peculiar application of art to industry that the middle-age Italians principally triumphed. We meet them far more in their own mood before the Chapel or Tribune from the Florentine Conventual Church at Santa Chiara, upwards of four centuries old, and ascribed to that little-celebrated though most poetical artificer, Simon Pollaiuolo. Also in the two exquisite fountains, one from Florence, the other from Venice, which show how sumptuous and tasteful was the luxury of the ambitious nation in those long-past-away ages. In the same class, too, a magnificent altar-piece, from the Chapel of the Palazzo Ambron, wrought by the deft Tuscan chisel; and one, purchased among rubbish, from the hand, as is evident, of Desiderio da Settignano. We could have desired that a larger illustration had been given, side by side with these examples, to the products of Neapolitan art and ornamental industry. We must not think of Naples as she has signalised herself in recent time. In the generation of Salvator Rosa, about the middle of the seventeenth century—of that Salvator Rosa, painter and patriot, whose name is associated with gloom, and who actually belonged to "The Company of Death,"—the Southern Italian genius, so slightly appreciated, except through the medium of his canvas, shone brilliantly beneath the blue Calabrian sky. He, pencil and sword in hand, dared a style which had never before—unless, perhaps, by some of the earlier Spaniards—been attempted. Among his contemporaries were the two Francazonos, pupils of Spagnoletto, Andrea Vaccaro, an imitator of Guido Rene, Carlo Coppola, Micco Spadaro—Coppola, who blinded himself by painting in the night—Falcone, whose life alternated between painting and fighting, and Spadaro, who was a master of miniature. It is to be hoped that, as a chapter of the particular history supposed to be written on the walls and in the cabinets of South Kensington, the deficiences in this respect will be remedied.

Costly and exquisite are the infinitely varied forms of artistic industry that testify to the art genius of the Florentine, Venetian, Genoese, and Neapolitan artificers, who, in proud creations wrought from marble, bronze, glass, or the precious metals, added priceless wealth to gold, and gave immortality to marble. Hearth and altar, cathedral and mansion were irradiated with their marvellous ingenuity, which made the most superb offerings of the earth subservient to their hand, and fashioned agate, jasper, lapis-lazuli, amethyst, and porphyry, into countless glittering splendours. Now, amid these varieties, which enchant us as we pass, we would struggle towards a different light, and discover, if possible, why so much of the genius thus exemplified seems to have been lost. A lost art seems to be a lost blessing for mankind. Who would not deplore if Italy ever ceased to be a fascination, or become a fable? That land meets us always with long-dormant delights, unmarked by common tourists; it is traversed by a thousand unbeaten by-roads, unsought of antiquaries, undiscovered by amateurs; yet, in these courts and corridors at South Kensington are innumerable hints, far from the tourist-haunted towns, which might illustrate books of beauty that never lay on any drawing-room tables yet. The rank and file of fashion scan them annually, but with a flighty glance; and they are left unknown. We wish that travel were less costly; that it required less of carriages and postillions, of hotels and couriers, of ostentation and extravagance; then might intelligent persons, of all classes, traverse the Continent in comfort, and study its memorials. Failing this, however, every one may wander with pleasure among the copies and relics that illustrate the joyous art of the prime Italian period. They may not geologise the Venus de Medici, or speculate on the Moses of Michael Angelo, as Sir Roderick Murchison might do on a boulder of the Baltic; they may not be all peering pedants, without romance or music in their natures, and, belonging to the lowest form of Niebuhr's school, still they may bring home, even after a half-educated visit to the great Italian cities, splendid impressions, worth preserving so long as they live. Or, they may gain an idea of the Italian glory at South Kensington. However, it must not be regarded as an useless kaleidoscope; as a mere *pasticcio* of pillar and post; as a market for people in the art-buying vein, searching for dyptiches and Francesco da Imolas. We may, in fact, if any independence be allowed to criticism, and if the South Kensington collections are to teach any truth at all, note some other intellectual dangers into which the unthinking populace might be led. Thus, the fear of forming an opinion apart from the received one. "The Last Judgment" of the Sistine, powerful though it be, abounds with much that is repulsive to human feeling; then that famous "Fornarina;" what in that stupid, staring, handsome, yet not beautiful face could have recommended her to Raphael? Her face is that of a peasant, ripe and brown as a Tuscan apricot, stamped with a total absence of purity and ideality, and in her form a presence like that of a female tiger, so unlike the dear Madonnas of the glorious Urbinese. She is a Goth, a Celt, a savage, in comparison with him, and her figure is detestable. In fact, as a bitter, yet not quite unjust, Urbinese critic said, long ago, the divinity of the "Fornarina" did not begin with her head, and certainly ended with her shoulders. Let us pass, however, from this conventional gallery, reminding ourselves, nevertheless, of the tribute due, and already paid by us to the immortal artist of Urbino. There is not much to note in the reputed "Tomb of Cæsar," which has sent back so many echoes to choruses of school-girl raptures, or in the model shrine of S. Peter, which makes the edifice appear insignificant. But the little glimpses of Italian life, as exemplifying a lingering taste in small things, are pleasant indeed; the ewels of the peasants; the tender porcelain cups in the loggias of Modean palaces—hung with gold draperies; the artificial flowers made by young girls during their three days of *festa* in autumn time; the pretty fans (fan-painting is now an exceedingly fashionable and emulative employment); and the tender toys of a voluptuous people, bright and beaming. In the Italian gallery, not restricted to pictures, an ideal gathers, which converts the whole into a long historical, and still imaginative perspective. They are fond of their antique history, these southrons of the European continent, and their traditions have inspired their art. For them every field has its Livian battle, every hill its Horatian ode, every fountain its Egeria; but they have not stopped at those sources. They have brought down their genius, which "joys in red and green," from the springs of Jordan, and the waves of Galilee. All this, it may fairly be said, gleams and glitters through the Italian canvas. It is characteristic and historical. In evidence, we have only to mark, as we move among the scattered yet priceless specimens, the objects, at once ruins and trophies, of the rarest genius ever exhibited by mankind; even those angular-bladed stilettoes, arms of Italian ladies, who committed themselves to a prospect of possible homicide, are gems of workmanship, and might have been finished at Damascus. Stooping beneath the arch of the Retiro delle Romie, with its practical inscription, *tu vivrai del lavoro del tuo mani*, we have to roam among innumerable changes in the arts and tastes of a most artistic and tasteful nation; a Basilica from Turin; a palace of rich marble from the same capital; a line of Papal portraits, stolid and uninteresting, and numerous other varieties. But we must confine ourselves to the art illustrations, and to the indication of them for student purposes. It will be very profitable to note, with care, the stucco-marked choir and transepts of the Duomo at Novara, with the unique frets and mosaics in the same building. These are manifestly reminiscences of the Roman style. They are all birds: the pelican, an emblem of the Saviour's love; the phœnix, an emblem of the resurrection; and the stork, as an emblem of filial piety. Herein may be traced, not a little, in an intensely Christian age, of Pagan conscience, imagination, and thought. All through the early Italian exemplications, indeed, are introduced corruptions of antique Roman and modern Greek, between which students at South Kensington should carefully discriminate. We have thus run through a small part of the collection because, while agreeing with Mr. Lowe that an Exhibition of Art is not necessarily and exclusively a school, it should possess some educational and intellectual influence. People who visit these places, and wander for hours among their treasures, are really making a grand tour through the present and the past, the arts and manners near, and the arts and manners far off. Therefore, it is not simply an amusement to visit such a gallery as that of South Kensington. What can it signify to any one whether he has seen a collection of mummies, and scarabæi, and mortuary-urns, and architectural fragments, unless he knows and considers what pages of the earth's annals they illuminate? The dead, if we are intelligent, speak to us. We have improved upon our ancestors in many ways, yet they held up the torches that have guided us. It is a profitable reflection at South Kensington, though not perhaps, a proud one, that we shall have to make many discoveries, and practice much ingenuity, and develope much genius, before we can be in certain respects, what Italy, India, and even China, were in days which are only remembered by their trophies.

◆

LUMP-CONTRACTS AND THEIR SUBSTITUTE.

By Solomon Set-Square.

(*Concluded from page* 345.)

IN the anticipated break-down of the lump-contract system, we may see the evil result of compromising an obvious difficulty, instead of looking it fairly in the face. Under the old measurement-system, builders ran no risk of loss from any professional under-statement of quantity of work : their losses lay usually in the inadequacy of its price. That, if quoted from an agreed schedule, filled up by themselves, was a matter under their own control, and capable of future remedy. But when the existing lump-system came into use, the wildest confusion came in with it. Architects of reputation refused to receive lump tenders based on anything short of proper estimates in detail; and as they themselves, incapable of foreseeing the evils that have supervened, neither issued bills of quantities of their own, nor nominated surveyors to prepare them, each builder had, at a heavy cost, to call in and pay his own special surveyor, and get up his tender as he best could. It was a sad change for the worse as far as builders were concerned, and after a few years' trial it had to be abandoned. Gradually architects themselves got into the habit of issuing the quantities; and but for their own want of courage, and their fatal recourse to an ignoble compromise, the lump system might have been satisfactory to every one, instead of being, as we see it to-day, reduced to an undignified source of contention. There was a difficulty, or "lion in the path." The architects of the day failed to look it in the face, and deal with it intelligently, as they easily might have done. They simply put off the evil day, which now cannot be ignored any longer. No succeeding body of architects —not even the Institute—has retrieved the false step; but has, if anything, aggravated the difficulty. The difficulty was, how to deal with errors in admeasurement: no very great difficulty, if we come now in 1870 to look at it in the light thrown on it by that demand of the London Builders' Society to have the quantities bound up with the contract. It might, and it should have been met in this way. By prefixing to our architects' quantities some such unmistakeable heading as this :—

> "These quantities have been taken out solely by the architect, who believes them to be correct within a margin of   per cent. on each item, and, if so, unalterable *pro* or *con*. Seeing, however, that the contractor has had no fair hand in their computation, but that, contrariwise, they are, if anything, likely to minify items in the interest of his committee, said architect quite intends to overhaul them at completion of works, and certify for all ascertained errors of want or of excess beyond the said margin, as the case may require."

Instead of a plain-dealing clause like that, which would have satisfied every equitable client and contractor, we quantity-taking architects turned our ignoble tails to the difficulty; clean shirked the question of infallibility, and threw it, with some some such clause as this, on the contractors; abdicating our essential functions as equity-judges-in-contract, and assuming the poor position of simple partisans in the sole interest of our clients,—absolutely unfrocking ourselves, in fact; and this at the invitation of no one in particular:—

> "These quantities are assumed to be correct; but the contractor is himself to see to their accuracy; as no alteration will be made in his contract amount in event of any error therein being, after its signing, discovered."

This latter kind of clause has, we think, disappeared in the metropolis; but, if we mistake not, it still flourishes in provincial towns. In London, as we have seen, architects don't, as a rule, take out even their own quantities. They nominate surveyors to do it, but won't be responsible for what they do. Finally, as we have already shown, parochial Boards and other committees have taken to nominating the surveyors on the same principle—or want of principle—that of absolute repudiation of the sufficiency of their own documents. In these hard times there are not too many building-surveyors who, even when paid the whole of their orthodox 2½ per cent., can draw a cheque for (say) the omitted wing of an asylum. How then are contractors to extract cheques in such cases from poorer professional men, whom the Metropolitan parochial Boards are creating by a beggarly "remuneration" of some ¾ per cent.? What with the contractors who ought not, the surveyors who cannot, and the parochial Boards and their architects who will not be responsible for the quantities, it may be fairly said that the lump system has come at last to a dead lock. Perhaps the sooner it comes to an end the better for every one connected with the building trade. In London it cannot go on much longer. Here, owing to the unwise bye-laws of the Institute, many architects leave all measuring and estimating to independent surveyors. Many of its architects are wholly unable to measure artificers' work at all, much less prepare their own quantities. These gentlemen cannot all at once retrieve the original false step of their predecessors of some thirty years ago. They must submit to see the lump system, which they might and ought to have administered satisfactorily, go to the wall: for the public—notably the workhouse boards—will never sanction either the use of the arbitration clause or the binding up of mere contractors' quantities with the specification. London builders are not to blame for this, nor are the surveyors. It is the fault of the architects, who, to reverse the language of Lord Derby, have got the lump system into a "muddle," from sheer indisposition to assert their unquestionable right to "meddle" with this quantities question. It is the professional question of the day. Let us openly discuss and deal fairly with it—we architects at least, who do not quite repudiate the adjustment of tenders, day-bills, and balance-sheets.

The request of the London builders to have the quantities bound up with the specification is a very natural one; and while it is plain, if these documents are to be prepared by independent surveyors, committees will never accede to the proposal, we think it only right that, where they have been issued (as in the provinces) by their own agent, the architect, the quantities should form part of the contract. There is not a more respectable class than that of the London building-surveyors; but at present the attitude of the public and of their architects towards them is too antagonistic to warrant the hope of their quantities being quietly annexed to a specification. In London at least we fancy we can foresee a far better field for their intelligent service of the building public than is now afforded them for the issue of quantities, for which no one will be responsible, and for which no one as it seems, will any longer pay an honest price. As matters are now being managed it is hardly worth a surveyor's while to undertake a bill of quantities, so full of risk and worry and gambling is the lump-contract system. We will conclude by suggesting a substitute for it, with a brief glance at some professional wants it would supply, and some special evils of the existing system, which we cannot help thinking it would quite remove, and so make building operations more respectable than they now are. Our suggestion, such as it is, is based on the old-fashioned idea that an architect ought not to (as some suppose) act as a mere cunning jackal to his client any more than, as that odious thing, a partisan of the contractor; but that in the words of the Council of the Institute,* "he is expected to exercise a just and fair judgment between the two parties." Let us try if we can to again set up little equity courts in our architects' offices, to inspire confidence in the minds of sterling tradesmen who enter them; and to, if we don't get it, at least deserve the respect of all fair-dealing clients, the only men worth conciliating. This can only be done by assuming, on the commencement of a contract, that, by our efforts to afford fair play to both client and builder, no one need be put to the delay, the worry, and the cost of an arbitration. Let us shut our eyes, as well as we can, to the possibility of such an evil; yet let our own office adjudication of our contracts be so complete in all its documents—so easy to trace—that if an arbitration should be called for, the whole arcana of the transaction, embodied in the bills of quantities and admeasurements, with all their details, can be culled from our own archives—our own pigeon-holes—and laid in black and white as authorised documents before the referee. As matters are now conducted we act on the very reverse of this principle—nay, we set up painted cabinets* in our studios, with such innocent things as contracts, measuring and valuing, arbitration, specifications, and extras, depicted thereon, for our own especial terror, as "hideous" monsters, monsters "with a rule," and we know not what else! They are all terrible matters in their way, and sadly prosaic; but, if architects are all to indulge in this over-refined luxury of the fear of them, who on earth is to deal with these "gorgons and chimeras dire"; and what's to become of the clients?

But the "substitute" for lump-contracts: well, we propose to do away altogether with irrevocable mysterious quantities which are for no one but the contractor and his surveyor to see, and which it is naughty for some architects to even talk about. Let quantities be taken out as now, whether by surveyors or by architects it matters not† to the scheme. Let only a moderate fee be paid for them—a percentage as now, but proportioned to the mere professional odium (not pecuniary liability) incurred by inaccuracy. Let the dimensions and abstract of these quantities be lodged in the architect's office for the use of his drawing-clerks in preparing detail drawings. Let the tenders be submitted as now; and by all means let the architect price out (or get a surveyor to price out) a bill of quantities to be sent in with the rest of the tenders: this will be his estimate of the cost, for the client to quote for all time—instead of some fancy sum which he and his architect might have talked of while the preparatory sketches were being discussed. Let the client, if he hesitates to proceed and wishes to throw up his project, pay the fee for the quantities (not to be used) which, as they then involve no responsibility at all, had best be divided between the surveyor and the lowest contractor, as may be easily arranged. Let the client, if he elects to proceed, quite understand the accepted tender is to be the basis of not a lump-contract but a lump-estimate, whose bill of quantities with its prices is then and there to be given up to the architect, to overlook as free from obvious error or "cooking" of prices; and if he, the architect, is satisfied with it, let the work proceed on the prices or charges for separate items. Let the gross amount be divided into instalments for certificate, payable in two, three, or four weeks (according to amount) after work has arrived to prescribed stages (to give time for careful admeasurement of the work at the contract prices), and let the architect (if work has satisfactorily proceeded beyond that stage, so as to afford him fair security) certify for payment of the whole sum, the client bearing one moiety of the measuring fee, added into the amount of instalment, and the contractor

---

* See Building News, page 318, "General Headings for Clauses of Contract."

* See Building News, page 354.

† It matters not *to the scheme*, but, wherever it is at all practicable, the quantities ought, I think, to be taken out by the person who best understands the drawings and specification, is likely to draw out the details and to supervise the execution of the work—the architect, in fact.—S S.

(unless his surveyor has done half the work) paying the other moiety: there is no reason whatever why the contractor should not by himself or his surveyor assist in the preparation of these measurements for certificate: they would save the architect an infinity of anxiety, as to what were or were not safe amounts to certify on account, with much misunderstanding between himself and his contractor on a very fruitful subject of contention. In this way let the proper sum due for each instalment be ascertained and (if he have not himself personally ascertained it) be laid before the architect for certificate, even to the preparation of the final account, subject as now to the drawback of a reserved balance. In this way we propose to get rid of balance-sheets and of questions of extras and omissions altogether. As to works avowedly or fabulously added by the client, the architect might, if he preferred it, have them measured up in a separate "black book," to show how guiltless he is of them. If he be wise he will let these "additions" go into the general account; for clients who have to draw cheques for these extravagances don't like to be reminded of their origin. It is best for the architect to stand godfather for the whole cost; and indeed by the scheme we are suggesting the usual wrangle about these questions of individual culpability would disappear, for it usually has its origin, not in the heaviness but in the unexpectedness of the builder's claim.

This, roughly stated, is our humble suggestion for a substitute for the lump-contract system. It may, for aught we at present know, be fraught with evil; but with very long experience of building-disputes and arbitrations, we are unable to foresee it. Let us take a review of the proposal, and endeavour to consider how it would most likely affect the four classes of grumblers at the existing system—the clients, the contractors, the architects, and the building-surveyors.

The client would be deprived of his definitive lump-contract, which, if it were ever really reliable, would be fatal to the entire scheme. But it is, as we have already shown, quite illusory. A client now never knows what a building erected by lump-contract may ultimately amount to. By our proposal he would infallibly see, instalment by instalment, how far his building was likely to exceed the original tendered estimate. He could pull his architect up, to use a driver's phrase, at once; and no architect, seeing his client's indisposition to pooh-pooh large augmentations of the early instalments stipulated for in the "lump estimate," would dare to go on increasing them. A parochial architect would take care to steer uncommonly close to the wind; he might possibly get over the "scrimmage" that would ensue on the superimposition of £100 or so on a first instalment; but he'd take care it was not tried upon a second one. As to the cost of the quantities, and of surveyor's fees for measuring, these would if anything, be lighter than they now are; while the services, as we could easily explain, would be far more valuable than they now can be. There would be no getting in of excessive tenders and having, *per fas aut nefas*, to cut them down to somebody's sure loss; nor would work have to be "scamped" to meet blunders made in the original tender—an evil which clients are now often complaining of. Clients don't want bad work; and when they get it are the very last people to felicitate themselves on having got it for a small sum.

The contractor would be greatly benefited by the change. He would have no anxiety about surveyor's computations, or architects' arbitrary repudiation of his claims for work honestly done. There would be little or no inducement for him and the architect to be, as now, wrangling "all through the job" about his over-drawing his money or what was to be done about his day-bills. He would, in fact, have few if any day-bills to produce, as the periodical admeasurements would reduce his claims as nearly as possible to mere "measure and value" by the ratio prices of his lump-estimate.

The architect, with or without a surveyor "to see fair" on his behalf, would simply draw out what he felt was needed with all latest improved ideas. Alterations would not, as now, necessarily involve "extras." His position towards both client and builder would be materially improved. He would, of course, share in all the advantages predicated for the client. He of all men would rejoice to have got rid of extras and day-bills—day-bills that lie for months on his desk untouched, because unintelligible and beyond control, and which can only be in the end sullenly passed or savagely repudiated *in toto*. If there is a skeleton in an architect's closet, or "a monster," without "rule," to be added to his "painted cabinet," it is surely a day-bill!

The building-surveyor, who is now a grievous sufferer by the existing system of gambling with brick and mortar, would be left to the quiet pursuit of his profession, with a certainty of being paid for whatever he measured. Now he too often takes out quantities for nine out of ten contractors who "go-in" for a contract; it is taken by the tenth man, who has taken out his own, and the surveyor gets nothing, which is a scandal: or he takes out the quantities, the job doesn't go on, and he is left to his remedy at law against the architect or the committee who employed him. His calling is anything but a satisfactory one; and we have already seen how its shortcomings have been aggravated by the Local Boards. Our system of tentative lump-estimates would at once relieve him of these irregularities; and, indeed, the office of building-surveyor to a non-measuring-architect in large practice would be an enviable one, in high esteem, as it should be.

The foregoing are a few of what appear likely results of the change suggested. That they would be popular with every class of client, contractor, architect, and surveyor, we will not maintain. We have thought the matter over very carefully, and with a very sincere desire to see building operations, where architects and surveyors are concerned, conducted on a more satisfactory principle, without, if it be avoidable, the cumbrous machinery of guaranteed quantities and arbitration; and we would gladly see the strictures of our readers, if any, directed to the same end. Why should we pay for guaranteed quantities to meet the remediable evil of money having got into John's pocket instead of Joseph's; or incur the delay, the bother, and the cost of arbitrations, when the public has not even the disposition to pay for architects and surveyors, who might, if it makes proper use of them, save all further worry and expense?

◆

ARCHITECTS AND THE LAW.

(COMMUNICATED.)

> "'Twill be recorded for a precedent,
> And many an error by the same example
> Will rush into the state."
>
> *Merchant of Venice.*

THE case of Ebdy *v.* McGowan, on which we offered some remarks to our readers on July 8 last, has again come before the courts, and resulted in a further decision of no ordinary importance to the architectural profession. It will be remembered that when that case was tried, the question as to the ownership of architects' drawings turned up in it, and leave was given to the defendant's counsel to move for a reduction of the verdict, if the full court should be of opinion that the alleged custom of the profession of retaining the drawings was not sufficiently established, or else to be considered unreasonable. Accordingly the question was argued last week on both sides, resulting in a decision, first to the effect that the custom was not sufficiently proved (the evidence on it being contradictory), and secondly, that even if proved, it was so unreasonable that the court could not recognise it, unless imported into a contract by special stipulation. This decision practically settles Mr. Barry's case as well, and in fact, so completely upsets the principle sought to be maintained by the profession, that the *Times* takes occasion from it to sing an *Io pæan* of triumph over its discomfiture, with special reference to the "genteel trades-union" known as the Royal Institute of British Architects, which comes in for no ordinary share of reprobation in the columns of the "Thunderer." We rather think the Institute has honestly earned a little of public contempt, though, as will presently appear, on different grounds from those put forward by the *Times*; but we cannot look on the decision as anything but most unfortunate, and while compelled for the present to accept it, do so under protest, believing that it is neither in accordance with a just view of the facts, nor with those principles of reason and common sense which are generally recognised in our common law.

In our previous articles on this subject we have always held, and still hold, to the view that all contracts between an architect and his employer must be considered to be governed by the usage of the profession, if that usage be fully proved, and be not in itself illegal or unreasonable. We have fully pointed out, however, that the danger was that whenever a question of usage came to be discussed architects would always be found ready and willing to swear flatly against each other on the subject, and therefore the first element, the proof of the usage, would be wanting. Although the Institute has put forward an authoritative statement of the usage, yet in more than one instance its members have not scrupled to give evidence directly contrary to it, and this glaring disloyalty, so far from being at once investigated and properly dealt with, has been passed over as of no consequence. The Institute, in fact, while attempting by various resolutions and protests to influence the public and the Government, who do not care a rush for it or its rules, has utterly neglected the more obvious duty of calling its own members to account for violations of what, at any rate, they have bound themselves to adhere to. So far, therefore, we do not grudge the Institute a share of public odium, not because we object to the principles it has sought to maintain, but because it has not shown proper firmness and consistency in maintaining them.

The little reliance to be placed on the *esprit du corps* among architects seems to have been fully appreciated by Mr. Baron Bramwell, who in reply to counsel's suggestion that a client who would not conform to professional usage would get no architect to act for him, retorted "He would get plenty." The learned Baron seems to have much the same view about architects as the late Daniel O'Connell expressed about his countrymen, "If you want to roast one you will get another to turn the spit." Architects, in his opinion, are such a miserable, hungry crew, that to get work they are ready to do it on any terms or on no terms, and do any amount of dirty work to spite each other. And, indeed, humiliating as this opinion is, there is too much foundation given for it by the readiness with which, in this case and others, architects of standing are found ready to aid in resisting the just claims of brother architects, founded on what should be regarded as unquestionable professional usage.

So far, then, as the failure of proof of usage in this case is concerned, we think it is clearly to be placed to the credit of the architect who appeared as evidence for the defendant, notwithstanding that the same gentleman had but just before written a letter to the Institute declaring his unwavering adhesion to its published views. We are aware that it has been attempted in these pages to apologise for this, on the ground that a distinction existed between drawings for which the architect charges 2½ per cent. and those for which, with the superintendence, he gets 5 per cent.

But this is simply hair-splitting, and evidently would not weigh for a moment with the judges in the present case; for, as the Chief Baron remarked, if a client was entitled to keep the plans for 2½ per cent., he would *a fortiori* be entitled to keep them when he had paid twice as much. The parallel he adduced as to an attorney and the papers left with him pointed to the same conclusion; so that though there may be differences in detail, there is none in principle, between this case and Mr. Barry's; or, indeed, that of any architect whose client may call upon him at any stage of a business, or at its completion, to deliver up the documents.

But even supposing the usage to have been (as it ought) fully and incontrovertibly proved, the Judges of the Court of Exchequer have taken it on them to pronounce it unreasonable, and therefore not to be recognised. And here, with all respect to their learning, we join issue with them, and maintain that their decision argues a deplorable amount of ignorance as to all architectural matters. Indeed, the expressions made use of by Barons Bramwell and Pigott are so intemperate, and display such strong prejudice and impatience, as to give us a firm confidence that their decision would not hold if the case were carried before a higher and calmer tribunal, as it may yet be. "The usage," said Baron Bramwell, "now set up was impossible and perfectly suicidal. It only need be stated to show it did not exist. It no sooner came into existence than it cut its throat (*sic*) by its absurdity." Is this language becoming the judicial bench of England? We boldly assert that it is not; and we further maintain that reason, justice, and fair play, as well as usage, are all in favour of the architects' side in this question, and against the doctrine now set up with such high sanction, that an architect is bound to deliver over his drawings as goods sold and delivered, and is to be liable to be dismissed or superseded at any stage of a work at the caprice of the client.

As to the stock argument of the *quid pro quo*, or "nothing for your money," there are plenty of instances in which the same thing occurs, without being held up as "absurd, ridiculous, &c.," as in this case. If a servant or employé be dismissed the day after he has been employed, we all know he has to be paid his full quarter's, or perhaps year's salary; and then, too, the employer gets no *quid pro quo*. If a counsel be retained with a heavy fee on his brief, and the case be settled immediately after, he keeps the fee and the client "gets nothing for his money;" but an architect having done half his work honestly and well, and being quite ready to do the other half, is to be summarily dismissed, and required to hand over his designs, to be put into other hands, lest, forsooth, the poor client should get "nothing for his money." To "such complexion have we come at last" through the apathy of the Institute, the unfaithfulness of individual members, and the popular prejudices of the judicial bench.

However, there is one aspect of the matter in which we can nearly agree with Mr. Baron Bramwell, and his echo in the *Times*,—"The case is not so important as governing the future, because people could make their own bargains with respect to the possession of the plans." It is of some importance as regards the future, because in a great many cases no bargain will be made, and every architect in such cases will be liable to be called upon to deliver up his plans, until some other decision reverses this. Till then, we earnestly advise all architects to make their terms clear and precise with their clients, and put this point beyond a question. A few words added to the present Institute scale, and that scale made the basis of agreement, or a few lines introduced into the clauses of the building contract, would soon supply the "special stipulation" wanting in the present case. For our own part, we think it would be reasonable enough to provide that a client should get copies of the plans if he wishes for them; but these should be charged for independently of the 5 per cent. (which never hitherto included them); and it should also be stipulated that the drawings should not be used for any other works without the consent of the architect, or an additional percentage for their re-use. If every client who has built a house would only take a fancy to get a complete set of drawings of it for record or reference, we, as architects, would be happy to furnish them on these terms; and this would give extensive employment to our draughtsmen—a class of men, to judge by their advertisements, rather in need of it at the present dull season.

SOMETHING WRONG WITH "THE INSTITUTE."

THE Royal Institute of British Architects, according to the recent address of its president, Mr. T. H. Wyatt, consists of 518 professional members, more than half of whom (275 Fellows) may be deemed "established" architects of seven years' standing. In addition to these gentlemen, representing, as far as the Institute is concerned, the entire body of "British" Architects, metropolitan and provincial (not to say also Caledonian), there are affiliated to the Institute no fewer than 106 members, who are not British architects at all. Some of them are, indeed foreign architects; but the rest of the whole 106, to use Mr. Wyatt's words, is made up of "men, eminent for their works or scientific acquirements, not being British architects, or connected with any branch of building as a trade or business, and resident in the United Kingdom,"—dummies, in fact, of whom we need take no account in what we are going to say.

It is that, in the words of the president,* "This is not a very satisfactory result" of a Royal Charter to British Architects, coeval, as nearly as we can remember, with the Reform Bill of old King William IV. Let us quote Mr. Wyatt again. He says :—

> "The Institute, consisting of 624 members, was founded for the general advancement of civil architecture, and for promoting and facilitating the acquirement of the knowledge of the various arts and sciences connected therewith. The Architectural Association consists of 550 members, engaged professionally in the study or practice of architecture, and of those interested in the various arts and sciences connected therewith."

And he proceeds to show that, during the past year, the numerical progression of the Institute has been restricted to ten Fellows and two Associates—an increase of only a dozen professionals—while "in the last year 103 new members have joined the Association."

Surely there is here some grievous anomaly to be rectified. There are hundreds on hundreds of English architects who ought to be got into the fold of the Institute; and something should be at once done, if the Institute is to maintain its "British" entity. Usually in cases of the kind we learn that the failure is owing to "want of funds;" but happily (or unhappily) this is not the case with the Institute. Its income last year was £1,952, out of which somehow (in coffee and conversazioni most likely) it contrived to spend £1,819, leaving only a balance of £133. Cannot the Institute contrive to lay out a little less of its income, and to get in by hook or by crook some more "British architects?" The thing must be done, for year after year we observe this sort of atrophy going on; and the Institute lapsing worse and worse into the condition of a respectable London club; which is a pity. How can a small society like this hope to dictate, as it seeks to do, and ought to do, to the vast brotherhood of English architects scattered over the metropolis and the provinces? There are in London alone, according to the Post-Office Directory for 1870, more than thrice as many practising architects as the Institute has of Fellows "all over Great Britain;" and to these we must add the vast number of provincial architects, many of them men of eminence and in very large practice. Cannot these be got to join the Institute? If they cannot there is something absolutely rotten in its constitution; and the charter it has held for some forty years had best be withdrawn. We write in the interests of the entire profession; and with a sincere wish to see the Institute take altogether higher ground than, according to Mr. Wyatt's statistics, it seems at all likely to do under its existing regime. It is not a mere question of comparison —a very unfavourable one—with the Architectural Association, but with its own ostensible aim and mission, as indicated by the very ambitious name it has for these forty years assumed—"The Royal Institute of *British Architects*"—that makes it, as it were, a public corporation for every English architect to sit in judgment upon. It is the province of the architectural journals to comment on anomalies such as those so candidly exposed in the late address of the President, and we trust the Council of the Institute will recognise the necessity of dealing with them. Here is the profession of English architects passing through a severe crisis (witness the attitude of the Office of Works, and the recent judgment of the Lord Chief Baron), and of aggregated British architects to deal with it, nothing to show for our Royal Charter but a paltry muster of two hundred and seventy-five practising architects of seven years' standing.

W. Y.

THE NEW BRITISH INSTITUTION.

SATURDAY, the 19th, saw the birth of yet another water-colour exhibition, an exhibition promoted by the same members who last spring brought before the public a collection of pictures purporting to take the place of the annual gathering at the British Institution. This modern Elisha now comes before us with a large number of water-colour sketches and drawings of average merit, chiefly by artists whose names are at present but little known to us. In these days of universal art education, a large number of painters spring up; young men, and indeed young women also, who having a sort of taste, or what is called taste for art, and having obtained a somewhat superficial knowledge of drawing, and a few months' experience in the way of putting colour on paper from a neighbouring art training school, or if in London, from one of the many places where the elements of the art are taught, sally forth over the country with the warm weather to set up, so to speak, for themselves, the result in the autumn exhibitions being a large number of very carefully finished and stippled-up landscapes, done on receipt at once laboriously and quickly all up to a certain mark of excellence, rural in feeling, bright in colour, without individuality, without glaring faults, and all calculated to draw forth from the number of sympathetic ladies with art proclivities who frequent such exhibitions their usual candid and exhaustive criticism, "How very pretty!" Let it be clearly understood we do not condemn this method of proceeding, for out of the many who thus carelessly take up art for a profession, some Claude or Titian, Poussin or Turner, may be evolved. The question really is, whether young artists are doing the best for themselves by this easy way of coming before the public, whether they may not be too soon satisfied with their pretty little pictures, and, by contenting themselves with small profits and quick returns, unfit themselves for the higher ranges of art, and rest upon producing what is pretty—to the exclusion of trying after what is great. The enormous demand there is at the present time for work of this kind is very undermining to the *morale* of a young artist, and a great inducement to many young men to enter more and more into the business, we cannot say the art, of producing pretty landscapes. But we are digressing from our subject, and will return to our proper field—the discussion of the pictures before us. The places of honour in the gallery are consecrated to the works of royalty, which having been given for the purposes of charity, are exempt from criticism. No. 2, "The Keeper's Cottage," by A. MacCallum, is very woolly in texture, and the foreground, though it is intended to be a rainy day, of much too spongy a character. There is greater merit in this painter's larger work, No. 234, "Cedars, Chiswick," the red evening light gradually dying down behind a giant tree. The cattle in No. 8, "A Scene near Oban," are painted with Mr. Brittan Willis's usual power and finish. No. 15, "Lingering Light," by W. G. Hooper, is a remarkable evidence of the wisdom of the old painter's adage, "Truth is not always to be adopted," as, though the effect is given with striking reality, the subject itself is a very ugly one, and devoid of natural grace; why the trees stand out from the sky as if they were made of cut paper, and yet we have noticed more than once this particular effect in nature. In No. 30, "Evening," by F. Williamson, the sheep are cleverly painted. Mr. W. Crane sends two of his peculiar landscapes, No. 32, "After Sunset," and No. 43, "The Hill Side." He may well call it after sunset, for in his landscapes the sun never does shine. This defect is, however, somewhat atoned for by the really poetical and artistic feeling which this painter has for the gloomy in Nature. In No. 32, the foremost tree relieves badly off the more distant one, and gives a blotted effect. In the "Hill Path," a maiden dressed in a rich crimson gown, seems watching with interest the contortions of a little demon, apparently intended by the artist for her lover. No. 77, "Sir Pandolfo," by H. Wallis, is an excellent bit of colour; the warm lights in the marble seat are truthfully rendered, as is also the rich shade of Sir Pandolfo's' dress; on the right-hand side a pretty little Italian flower-girl timidly approaches. No. 62, "A Surrey Lane," by E. A. Waterlow, is a rather poor imitation of those scenes so cleverly painted by Warren. No. 88, "Blue Passage," by R. S. Stanhope, is excellent in colour, though the figure is out of drawing. Mr. Gilbert's landscape, "Now Fades the Twilight on the Glimmering Scene," is painted with an excellent intention. The colour is good, and the effect of the rising evening mist well given. There is also much truth in the pale green evening sky, while the warmer lights on the broken grassy foreground are gracefully touched in. No. 52, "A showery Day near Bolton Abbey," by H. A. Harper, is good and Cox-like in effect; and No. 89, "A Grey Day on the Kennett," by J. H. Leonard, also deserves attention. This artist has several meritorious works in the Exhibition. No. 136, "Embroidering the Raefen," by C. P. Slocombe, is a picture of much pretention, but the colouring is crude and inharmonious, and we cannot say much for the beauty of Hubba's three sisters. "At Bay," No. 148, by W. J. Mückley, is boldly and well painted, and the colouring is harmonious; the man at bay seems to be holding his gun in rather an awkward way. There is much feeling and nice taste in Mr. W. B. Scott's picture, No. 152, "Last March of King Edward I.," but the want of power in the drawing throughout mars the whole work. What can have induced the committee to place such a wretched work as "Joan of Arc," by J. M. Jopling, No. 145, in such a prominent position? The armour is atrociously painted. No. 165, "A Breton Scribe," by J. Michie, is well worth attention; the face of the old man is capitally given. No. 173, "La Famille du Franc-Tireur," is good in action and interesting from the events of the day, but it is sadly deficient in colour; the artist, Mr. A. J. Verhoeven Ball, has another and a better work in the gallery, No. 266, "Rehearsing for Papa's Birthday." No. 180, "Cleve Mill," by Miss S. S. Warren, is vigorously painted, though it is perhaps a shade too brown. No. 133, "Agapanthus Umbellatus," by H. W. Foster, is a dreadful production; surely labour and time are both wasted in this case. Mr. J. P. Emslie sends a highly-finished and clever little picture, "The Bedouin," No. 195. Among the many stray nymphs sent by Mr. Frost to this exhibition we prefer No. 211, "An Incident from the Massacre of the Innocents." No. 221, "Five Minutes' Peace," by J. Hayllar," a sturdy little boy fallen asleep over his drum, is somewhat too hot in colour. No. 277, "Cleve Mill," by E. F. Brewtnall, is a curious instance of good colour and much finish, combined with an entire absence of light and shade. Mr. Gale's little work on the screen, No. 295, "The four Miss Kenwigses taking their First French Lesson," is full of character, but we certainly cannot agree with Mrs. Kenwigs that they are too beautiful to live; the lovely Morleena is, on the contrary, the perfection of ugliness. No. 303, "Villa Borghese, Rome," and No. 358, "Nuremberg outside the Walls," are Mr. Donaldson's best works in the Exhibition, and are both marked with this artist's great feeling for colour and his usual ability in the mode of painting. No. 355, "The Exile," by C. G. Lawson, is clever and very carefully painted, though perhaps a little too highly finished. There is also much merit in No. 380, "Farmyard near Cookham," by J. Parker. No. 325, by H. Wilkinson, is good in tone and in its appreciation of evening light. No. 308, "Moonrise," by J. H. Leonard, in which the moonlight is really well felt; No. 343, "Cookham Common," by J. Parker; No. 358, "At Burseldon," by D. Law; No. 327, "The River Mole, near Leatherhead," by W. Kümpel, all deserve attention and are worth studying, and call for a longer notice, but as this is impossible, we must request our readers to go and criticise for themselves.

---

* See Address of President, Building News, page 354.

EBDY v. M‘GOWAN.

IN our last number we gave a report of this trial, which has excited such general interest as to have formed the text for a leading article in the *Times*. Being, however, of still greater interest to the profession than to the public, we propose to give some calm consideration to it. We say that the matter in dispute is of greater interest to the profession than to the public advisedly, for the latter have taken it up simply upon abstract principles of what appears, from their side of the question, to be justice. They are claiming the drawings, not because they want them, but because they think they ought to have them. If they got them they would be often of little or no use to them, and they would take no care of and soon lose them, except in some particular cases; and at any rate, they have done without them very contentedly hitherto. Such particular cases may mainly be summed up as included in public buildings. It cannot be denied for a moment that it is desirable that accurate plans of all public buildings should be preserved for future use and reference in safe custody, other than the original architect's office, and no member of the profession could be so suicidal as to object to such retention of a set of drawings of any public building he may have erected. Architects only object that the cost of an additional set of plans to the one which was made for their own use and the tracings they are bound to supply to enable the work to be executed should be thrown upon them and deducted from their by no means exorbitant remuneration.

This is Mr. Barry's case, and differs from that of Mr. Ebdy in being of infinitely less importance, for after all the cost of an extra set of drawings is not great in comparison with the remuneration, not pecuniary alone but that appertaining to reputation, which an architect receives from such a work as the Houses of Parliament. The peculiar hardship in the case of Mr. Barry is that from the demand made upon him being novel he has not been able to prepare such an additional set of drawings as is now required by the office of works, and, therefore, he is stripped of all the drawings in his possession to his grievous detriment. Such a contingency is, however, easily to be provided against hereafter, and with the present appliances of photography and lithography it is easy at small cost—a cost which probably may be made a portion of the contract—to provide as many copies of the plans as will be needed by employer, architect, builder, and clerk of works, and, we will add, the library of the Institute of Architects and other public institutions which ought to have them into the bargain. As regards a numerous class of works, such as churches and schools, however, the want of any proper authority into whose hands such a set of drawings could be entrusted, and the certainty of their soon being lost for want of a proper place to keep them in, renders the question of little interest to any one but their architect, who must keep copies for his own use and reference.

And it would appear that the architect, again, has greater interest in the possession of such documents than his private clients, seeing that the writer never remembers ever having been asked for one, and a similar experience has been deposed to by numerous architects in all parts of the country.

At the same time it cannot be considered as other than most desirable that the owner of mansions should possess and preserve copies of all drawings which can throw light upon their design, construction, drainage, &c. All that the profession really seeks to maintain is the right to the copyright of their design, and to a fair remuneration for the work demanded of them. It is this question of copyright which, coming more directly into Mr. Ebdy's case, makes it of more importance than Mr. Barry's, and we take the opportunity of thanking Mr. Ebdy for having so boldly, at his own cost, supported his view of the interests of the profession.

We deeply regretted to see a slur cast upon him by a writer in a contemporary, as prejudicing Mr. Barry's claim by bringing forward his own "exceptional and insignificant" one at an ill-chosen time.

That such a statement is incorrect, as well as ungenerous, we need only refer to that made by Baron Bramwell, viz., "Where the building has been completed and the employer had paid his architect his 5 per cent., he had derived the principal part of the benefit of his work, and whether the architect ought in that case to deliver up his plans was another question."

Then, again, although the decision of the Judges of the Court of Exchequer has been adverse to the claim of Mr. Ebdy, the result of the trial has not been so prejudicial as at first sight it would appear, and at any rate the profession should know the ground upon which it stands. To quote again from Baron Bramwell, "Let an architect say he intends to keep his plans in any case, and his employer will know how to act." It was the absence of a previous understanding on the subject that, as the law has been expounded, lost Mr. Ebdy his case. The remedy in future will be to insist upon a proper understanding on the subject.

"Let the employer," say we, "say he intends to get his architect to design a work for him and employ some one else to carry it out, and the architect will know what to do." He ought at least to be at liberty to decline a commission upon such terms, and not to be led on in the supposition that he is engaged in the usual manner, and afterwards turned to the right about, and his reputation injured as it must be by such a proceeding, when the virtual contract between the parties was only half executed. When Mr. Seymour remarked that no architect would act for a client upon such terms, Mr. Baron Bramwell's reply that "He would get plenty, and if not, let him do without one," was comic by its absurdity and ignorance.

Suppose this same view to be taken by the legal mind of kindred arts, the learned judge might say to an intending purchaser of a picture or statue from an artist who declined to give up as part of the bargain his sketches or models, that he can buy some other unsold painting or sculpture in the exhibitions. The advice, however, would be hardly consoling. The Lord Chief Baron instanced a case, which he considered parallel, of an attorney whose bill of costs had been paid in a suit which had come to an end, and observed that it would be absurd to say that he could insist on retaining the briefs and other papers when demanded by his client.

This is a point which deserves much consideration, for we believe that in truth it is some jealousy on the part of the legal profession, lest that of architects should be better off than their own in this respect, which has prejudiced their minds against the claim set up by the architectural profession. A correspondent in another contemporary, who signed himself "A Puzzled Individual," has, however, made some observations so pertinent to this point that we will quote some of the queries he puts as being, in our opinion, far more to the point raised by that learned judge, although more perhaps with reference to Mr. Barry's claim than Mr. Ebdy's. "Is a sculptor entitled to retain the model from which he executes a statue which has been expressly designed for a client?" "If I order a piece of machinery can I claim all working drawings or models which may have been prepared for the use of the workmen in the manufacture of the same?" "If I employ a solicitor to prepare a conveyance for sale of property, can I demand of him the draft copy?" "If Baron Bramwell, or any other judge, gives judgment against me in a cause, and I have consequently to pay the costs, am I entitled to demand the notes he takes on hearing the case?"

These and other such questions may yet be asked and sifted with advantage. By having raised the subject Mr. Ebdy, has, however, done good and not harm, for even if the view taken by the profession be erroneous in some respects, what it really seeks is simple justice, to obtain which for the present their only chance seems to be by making such a contract with employers at the commencement as we cannot think with Mr. Baron Pigott is either "absurd or ridiculous," and much less "impossible." J. P. S.

ON THE HISTORICAL DEVELOPMENT OF ORNAMENTAL ART.

Dr. G. G. ZERFFI delivered his seventh lecture on this subject in the lecture theatre of the South Kensington Museum, on Tuesday evening last. In continuing his remarks on Assyrian and Babylonish art, the lecturer said that the researches of Layard, Loftus, Churchill, Boutcher, and Lynch had convinced every archæologist that the valley of the Euphrates and Tigris had been the seat of a civilization and an original art. Every step taken on that ground proved that it had once been the centre of a mighty national life. Though the remains were but scanty, we still possessed sufficient to enable us to form a correct appreciation of Assyrian, Chaldean, or Babylonish art. The hills of Wurka, about 180 miles from Bagdad, were now thoroughly explored. A square, surrounded by an earthen wall, contained three large and several smaller ruins, with terraces, the whole forming one vast necropolis. In the interior were found clay coffins in large numbers. These ruins were now covered with a deposit of saltpetre, small shells, and broken pottery. The quadrilateral building was of unburnt bricks, and was supported at the four corners by double pillars. The surrounding hills seemed to indicate the former existence of courtyards and secondary constructions. The principal building must have towered over the others in a pyramidal form. The south-western front was covered with plaster of Paris, in many places to the depth of 2½in. This stucco was as firm as ever, though upwards of 2,500 years must have elapsed since it was laid on. The construction resembled that of the pile or lake dwellings, and the ornamentation was a remarkable imitation of woodwork. Most interesting also were the geometrical patterns produced in glazed and baked clay. Clay walls with glazed and coloured coverings were found in several Assyrian and Babylonish buildings. The mosaic decoration in glazed bricks on the walls of Wurka, therefore, did not form a solitary instance of this description of ornamentation. A peculiar low wall was discovered at Wurka by Mr. Loftus, constructed of pots placed one upon the other in a horizontal position, with the mouths turned outwards, giving to the whole the form of an honeycomb. Capitals in stucco were also found expressing types of the Ionic and Corinthian motives. In the latter case, however, a human figure was placed between the leaves, which were those of the palm instead of the acanthus. The volute of the Ionic type also resembled two serpents drinking from a cup rather than the horns of the ram. Wurka must have been a sacred burial-place, to judge from the thousands of coffins found in the ruins. These coffins were of burnt green glazed clay, and imitated the form of a body wrapped in swaddling-clothes, thus plainly originating in textile art. On the shores of the River Kabur was the artificial mound of Arban, which had been explored by Layard. Here peculiar forms of sculpture had been found, neither precisely Assyrian nor Babylonish in style, but rather appertaining to some period of transition. They were, to some extent, important, as they much resembled the first European attempts in this branch of art. The sinews and muscles in the men and animals were much coarser and more ropelike than those in the later Assyrian sculptures. It was rather difficult to arrive at an exact idea of what architectural superstructures had been in this primitive seat of Asiatic civilisation. There could be no doubt that the plastering of their walls with clay and gypsum subsequently led to an ornamentation in these plastic substances. In the first instance geometrical patterns had been used, and at a later period intaglios and painted reliefs of men and animals were introduced. The transition from cloth wrappers to glazed clay coffins had not been greater than that from woven wall tapestry to an imitation of such material on the walls themselves. Of the pillars we knew little or nothing, but we might well assume that the textile art of the Chaldæans, as also their architectural and tektonic forms, bore great resemblance in their later developments to those of Assyria and Persia, for we found in the empire founded by Asshur and Ninus on the shores of the Tigris the same feelings, motives, and forms, though in a state of greater development, being, in fact, a transition into the Early Greek, more especially the Ionic style. The mounds on the eastern bank of the Tigris, of which there were three (Khorsabad, Nimroud, and Kuyunjik), represented three palaces, which had all been within the walls of the great town of Nineveh. These mounds resembled those of Chaldæa, having a more or less square form. The principal feature of Assyrian architecture was the terrace. The arrangement was bare of all symmetry, though the principles of proportion and subordination of colossal masses were observed with a kind of regularity. The apartments were long and corridor-like: the walls being of air-dried bricks, and of great thickness, covered with slabs of alabaster. There were few traces of independent supports, such as columns or pillars. The arrangement of the decoration was a close imitation of highly-developed woven patterns conceived as large enclosing tapestries. The walls and flooring were covered with tesselated work, and at the entrances lions, griffins, &c., were represented. In their paintings an old and a more recent style could be distinguished. The ground in the older style was blue-green, that in the later either white or yellowish. The ornamentation of both, though different in style, was in all its motives and feelings taken from textile art. It was, in fact, embroidery painted. Palm branches, pomegranates, open or closed lotus flowers, were the principal motives in the older style; embroidery more tangibly expressed, as in rosettes, tassels, seams and buckles, that in the newer, together with a tendency to architectural ornamentation in the cornices of the walls. Both styles were distinguished by strong black outlines, and a total absence of shading. Amongst the Assyrians we found principles of decoration which far surpassed mere ornamentation with geometrical patterns. Having drawn attention to the different styles to be observed in the clay paintings and the reliefs on stone, and detailed the processes of baking and glazing the clay, Dr. Zerffi proceeded to treat of the colours used. He said, with reference to those of the Babylonish tiles, that they had been analysed by Dr. Percy and Sir Henry de la Bèche, of the Geological Institute. They found the yellow to be an antimoniate of lead, containing tin. This mixture, thought to be a modern invention, was now called Neapolitan yellow, but is clearly shown to have been known to the Assyrians, Babylonians, and Egyptians. The white was an enamel of oxide of tin. The invention of this colour was attributed to the eighth or ninth century, was lost, and again reintroduced by Lucca della Robbia in the fifteenth century. The blue (which was darker than the Egyptian) and the green were pure oxide of copper mixed with lead, which was added to liquefy the colour. The invention of this mixture is, in histories of pottery, not generally traced farther back than the twelfth or thirteenth century. The red was a sub-oxide of copper. In conclusion, the lecturer said that Assyrian art was in direct connection with prehistoric art, and was worthy of careful study. It formed a link between the productions of the savage, the nomad, and the settled agriculturist. It showed a very correct understanding of what ornamental art should be. Assyrian architecture was undoubtedly the first transition from wooden construction. In examining Assyrian forms and patterns with a proper degree of attention, the student would supply himself with many new motives and ideas, which would be highly useful to him in his own works.

EDINBURGH ARCHITECTURAL ASSOCIATION.

The first ordinary meeting of the present session of this association was held on Wednesday week in the rooms, 5, S. Andrew-square. Mr. Thomas Ross, vice-president, occupied the chair; and after the election of several new members, and the usual preliminary business of the meeting, the president for the current year (Mr. R. Morham, jun.) proceeded to read a paper "On various Defective Internal Arrangements of Dwellings." He introduced his subject by stating that it came under the head of the strictly "useful," and had no claim to belong to that department of the architect's work which may be called the "artistic;" and that though the subject was by no means a new one, the importance of it had, notwithstanding all that had been said, been much overlooked, and required to be brought under notice again and again. He then referred at some length to the subject of the ventilation of dwelling-houses, pointing out that, while it was usual at the present day, in the case of most public buildings, to make some provision for this important function, in the case of dwelling-houses it was most frequently quite overlooked, and made to depend very much on the want of fitting about doors and windows; and then went on to show that it was not enough for the architect that his employers were indifferent to such matters, but that it was his duty in all cases to endeavour to impress on them the duty of giving effect as far as possible to the dictates of modern scientific research, and that the mere indifference to the importance of proper ventilation was no reason why it should not be pointed out by him on all occasions as a very necessary thing. He then proceeded to remark on dark closets, and rooms with borrowed lights—things which would not be tolerated in country houses, where there was plenty of fresh air, and which ought, therefore, to be still less so in town houses, where there is so much greater demand on the air within a given space, and that though perhaps not always avoidable, they should be made use of as little as possible. He next spoke of the frequent occurrence of water-closets, either not ventilated at all or ventilated into lobbies and staircases, but remarked with satisfaction on recent police enactments on this head. He then described two different kinds of ventilating apparatus that have recently come pretty extensively into use—the one being Howarth's patent Archimedian screw ventilator, the principle of which is indicated in its name; the other that invented by the late Mr. Cumming, of Edinburgh, and introduced by him into numerous private dwellings and other buildings in town with considerable success. The next subject referred to was that of water supply, or rather the waste of water, which he thought could most effectually be checked by the use of meters, but admitted that there were serious difficulties in the way of their introduction. The question as to the best kind of water-tap, and the case which was tried in the Sheriff Court a few years ago, wherein the relative merits of the ground-plug and screw-down principles were very fully discussed, were then alluded to, and a portion of the evidence in that case was quoted to show that in the towns of Manchester and Norwich the introduction of the screw-down tap had reduced the quantity required per head per day from 38 or 40 gallons to from 13 to 15, which was found amply sufficient for all domestic purposes. He lastly referred to the treatment drains often receive both in their formation and in their after usage, and suggested that these should always be laid under the close inspection of a clerk of works, and that too much care could not be inculcated on domestic servants and others to refrain from using drains and soil-pipes for the purpose of getting rid of refuse which they were never intended to convey; and he concluded by urging upon architects the duty of sparing no pains with reference to this and the other matters dealt with in his paper, from the fact that, though not perhaps the most attractive department of his work in an artistic point of view, they were of very great importance for the comfort and well-being of the community; and that no opportunity should be lost of impressing on proprietors, and the public generally, but very particularly on servants, who more than any one have been benefited by the introduction of various kinds of domestic apparatus, the duty and expediency of the careful use of those appliances, the very convenience of which often helps people to forget the benefit they derive from them, and to take liberties with them for which they are not at all calculated, and which so frequently result in the necessity for very expensive repairs, which, but for such abuse, would have been entirely avoided.

After some discussion, a vote of thanks was awarded to Mr. Morham.

NEW THEATRES.

Belfast.—The old theatre in Belfast is about to be pulled down and rebuilt. The new building will be considerably larger than its predecessor, the site being greatly extended by the purchase of adjoining property. Mr. Charles Sherry is the architect.

Chelsea.—The new theatre now in course of erection in Sloane-square, Chelsea, is to be called the Royal Court Theatre, and it will open in January next. Mr. W. Emden is the architect.

The Surveyor.

LAYING OUT OF CURVES. II.

THE inaccuracies attendant upon the method anciently practised by all surveyors, and still, we regret to say, practised by some, in laying out curves have been fully laid before our readers in our last article. Many of the errors connected with that system are self-apparent, and the remainder are plainly perceptible after a little investigation and patient impartial scrutiny. It has been shown that the determination of the springing points could not be ascertained with any degree of accuracy, or with that amount of precision which always accompanies good work, unless the tangents were continued to the point of their common intersection, and the angle of their inclination to one another measured with a theodolite or transit instrument. Such a course is not practicable where the knowledge of the surveyor is not equal to the task of a trigonometrical field operation, and where the only instruments or appliances available are the chain, tape, and offset-staff. As the springing points, which are the data for the commencement and end of the curve, are not based upon a correct determination, it is not surprising that the intermediate points should be equally liable to errors. From false premises sound conclusions can never be deduced. The object of all professional men engaged in fieldwork is to reduce their main and tie lines, their offsets, and, in fact, all their measurements, to a minimum. They are well aware that every time the chain is stretched along the ground there is an error introduced into the measurement, and infinitesimal though it may be, it gradually augments even with the most skilful management and dexterous manipulation. What, then, must be the value of the accumulation when carelessness and unscientific treatment combine to enhance its proportions? Omitting all consideration of the inaccurate position of the springing points, the number of lines that must of necessity be introduced into the offset methods, and the continual shifting of their direction, are fatal to it. As a crucial test we submit the following. Let the springing points of a long curve, say three-quarters of a mile in length, be accurately determined by the method that will be shortly described, or by any other that fixes them to within 3in. of their mathematical locus, and let it be attempted to start the curve from the one, and by the method of offsets, and bring it in right at the other. The most experienced engineer or surveyor could not make it "close," not after repeatep attempts and upon level ground. This is admitted by the author of the method.*

Having demonstrated the fallacy of the one method, it is but right to convince our readers of the accuracy and fidelity of the other. To accomplish this, we will describe *seriatim* the steps, both theoretically and practically, that are necessary to lay out a curve which shall be on the ground as mathematically correct as on the plan which is subsequently made from it. The plotting of the curve on paper is a nice and delicate operation, which will be alluded to in its proper place. We will first of all go through in detail the actual operations that must be performed in the field, assuming the calculation to have been made. As a general rule, the field operations and the calculations should proceed *pari passu*. It is impossible for the surveyor to make his calculations beforehand, as he cannot know what his angle of intersection is until he has prolonged them to their junction and actually observed the angle with the theodolite. Our practice is to take our note-book and book of logarithms into the field with us, and make our necessary calculations *al fresco*, if we are not lucky enough to find shelter. One advantage of this method is that any very flagrant mistake in the calculations is at once apparent on casting a glance over the ground, and another that much time is saved, as they can be practically checked directly after they are made. Referring to Fig. 1, let A C, B C, be the prolongation of the two straight lines required to be joined with a curve of a given radius. As already explained, A and B are the springings, and A C and B C the tangents of the curve. In the first place, if a map or plan, no matter of what description, good or bad, accurate or inaccurate, of the locality is procurable, it should be obtained, or at least a tracing of so much of it as will serve for guidance. Upon it the points A and B may be laid down roughly, and the tangents A C and B C prolonged to the point of intersection at C. It is, of course, not absolutely necessary to obtain possession of a plan, but even the approximate ascertaining of the point C will save time and unnecessary trouble in prolonging the two tangents. If these lines be of great length and pass through woods and difficult ground, and no map or plan be procurable, it will save a great deal of labour if the directions of the original straight lines, which of course are identical with those of their prolongation, be observed with a compass. They can then be roughly plotted on a page of the field-book, and a very good idea obtained of the whereabouts of their intersection. As a compass is always attached to every properly constructed theodolite, there is no need of the surveyor encumbering himself with that instrument in addition.

FIG. 2

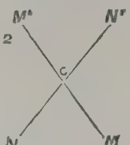
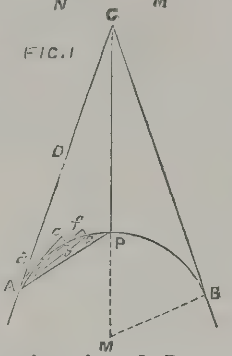


FIG. 1



Having obtained some inkling, by means of a map, or by the compass, or failing both of these methods, by the eye alone, of the position of the point of intersection C, the next step is to commence ranging them out, not chaining or measuring them, for that is done after the point C has been determined, and the angle of intersection A C B accurately observed. Let us begin with the tangent A C. The theodolite is set up anywhere in the original straight, somewhere near to A, one of the points to be ultimately determined. The telescope is then directed to a point on the line, or as it is technically termed "set upon it," and being reversed the line of sight will give the prolongation of the line. A couple of rods are then put up "in line" as near the point C as can be judged under the circumstances, one on each side of it. If it should be impossible to see the approximate position of C, from the spot where the theodolite is set up, a point D, must be first obtained in the prolongation or the tangent. The theodolite must then be shifted to it, the telescope set upon the point where the instrument previously stood, and being reversed, will give the prolongation of the tangent A C as before. The same operation is accomplished with the other original straight line, and the result will be apparent on referring to Fig. 2. Let N and N′ represent the two rods or points obtained in the prolongation of the tangent A C, somewhere between which the point of intersection C is situated. Similarly, M and M′ are the corresponding points in the direction of the other tangent, B C. Manifestly the point C lies also along the line M M′. A line is then stretched from N to N′ and from M to M′, and at their intersection C a stake is driven down and a nail put in the head of it to mark the exact point. Many rough-and-ready practitioners, who have perhaps never put in a curve accurately, will be disposed to laugh, if not to sneer, at this little detail. We are the last to advocate extreme accuracy at the expense of valuable time or trouble, but when neither are sacrificed, as in the present instance, it is the proper course to pursue. It must be borne in mind that attention to little points like these makes all the difference very often between good and bad work. In the case we are investigating, it cannot be concealed that the accuracy of the whole curve depends upon the correct determination of the point C. Any error committed in ascertaining its position will affect the whole of the rest of the work, and, moreover will entail a large amount, of additional trouble and annoyance before it can be detected. As will be seen as we proceed, the half of the curve might be "got in" before the error was perceived, and in order to amend it, the whole work must be gone over again. The loss of time, when these contingencies do arrive, as they will, sometimes, in spite of all precautions, is nothing to the vexation the surveyor feels at being obliged to go over the ground a second time.

The point C, being accurately ranged and marked, the theodolite is set up over the stake driven there, which can be done with great precision by making the "plumb-bob" hang exactly vertical over the head of the nail driven in it. By observing any two points in the direction of the lines A C, B C, the angle of intesection A C B is obtained. These points should be as far distant from C as possible. The original points, where the instrument was set up for ranging the tangents, are the proper ones to adopt. This preliminary operation, which is generally a very tedious one, especially where there is much clearing of brushwood and small timber, having been accomplished, the next step is to determine the springings A and B, or, what amounts to the same, the distances A C, B C, which are the length of the tangents. These are equal to one another, and therefore the same calculation applies to both, although the chaining must be done for each separately. To calculate the length of either tangent, C B for example, we have as given quantities the angle of intersection and the radius of the circle. Referring to Fig. 1, in the triangle C B M, the angle B C M is known, since P being the centre point in the curve, the line C M bisects the angle of intersection, and consequently the angle B C M equals half the angle B C A. But the triangle C B M is a right-angled triangle, because C B being a tangent to the circle at the point B, and B M the radius, the angle C B M is a right angle. The proposition, therefore, becomes reduced to the following: Given the angle B C M, the side B M, and the angle C B M being a right angle, it remains to determine the side C B. Let $B\,M = R$, and the angle of intersection be put equal to θ, and the tangent C B equal to T, then $R = T \times \tan \frac{\theta}{2}$, or, reversing, $T = R \times \cot \frac{\theta}{2}$. This length having been calculated, it is measured from C, in the direction of C A, C B, and the springings A and B accurately determined and marked by stakes in a similar manner to the point C. We have thus the common current and end of the curve ascertained with mathematical precision, which can never be done without the use of an angular instrument. As a check upon the curve, the point P, or secant point, should always be determined before actually commencing to lay it out. For this purpose all that is necessary is to calculate the length C P, and set it out in the proper direction. The direction is at once obtained by laying off half the angle of intersection from the point C, and setting up a rod in line, somewhere near where the point is likely to come. To calculate the distance C P, we have from the same triangle as before $B\,M = C\,M \times \text{sine} \frac{\theta}{2}$. Substituting the proper values of these nes, and bearing in mind that $C\,M = C\,P$ P M, we obtain $R = (C\,P + R) \times$ sine

---

* *Vide* BAKER's "Elementary Treatise on Land and Engineering Surveying," in the notes to chapter on "Railway Curves."

$\frac{\theta}{2}$. Solving and reducing for C P, we have $CP = R\left(\operatorname{cosec}\frac{\theta}{2} - 1\right)$. The line C P is then measured, and the point P "staked out" to serve for a check, which will be explained when the laying out of the curve is treated upon, a practical operation for the description of which we have not space on the present occasion.

ARCHITECTURAL ASSOCIATION.

THE second ordinary general meeting of this Association for the present session took place on Friday evening last, the President, Mr. T. H. Watson, in the chair. The minutes of the last meeting having been read and confirmed, the following gentlemen were elected members:—Messrs. A. Cumming, R. W. Moore, J. S. Gurney, J. Deane, and H. W. Pratt. Several nominations for membership were then made, after which Mr. J. S. Quilter, hon. sec., called attention to the Architectural Drawing Classes at the Royal Academy, which have already commenced, and which any student of the Academy was at liberty to join. Some of the Architectural Art Classes at the Architectural Museum had also commenced. Mr. Quilter further announced the result of the competition amongst the members of the Association for the prizes offered by Messrs. Cox & Son, for the three best designs for a set of Communion plate. (See "Competitions," on another page.)

Mr. Edmund Sharpe, M.A, F.R.I.B.A., then proceeded to give an *extempore* address

ON THE USE OF COLOUR IN DIAGRAMS ILLUSTRATING THE HISTORY OF ARCHITECTURE.

Mr. Sharpe, in his introductory remarks, said he thought the members of the Association would accept him as a friend who, having long ago withdrawn from the practice of architecture as a profession, and having therefore no personal object to serve, desired to assist the junior members of the profession in the pursuit of a study to which he had devoted a considerable portion of his life, and upon a tolerably complete knowledge of which depended their future excellence as professional men—he meant the study of the history of church architecture. When he spoke of the study of the history of church architecture, he meant the serious study of a great art—the art of building during the middle ages—and not that spurious *dilletanti* study of Mediæval art which, mixed up with the examination of barrows and tumuli, the investigation of British earthworks and Roman roads, and the rubbing of brasses, passed under the general term of "archæology." Nor did he mean that attempt to unite ancient art with modern practice in church building and church observances which called itself "ecclesiology." To the true architectural student a far simpler and nobler course was open. He had to trace out and follow the progress of Mediæval architecture by the help of the admirable illustrations of it that existed in every part of Christendom. He had to note the changes of form through which Mediæval architecture passed from its rise in the eleventh century to its complete development in the thirteenth century and its subsequent decline in the sixteenth century—changes of form in outline and in carved work. In other words, he had to mark and record the indications of its slow, but constant, regular, and simultaneous progress, and to turn the lessons which were thus to be learnt to his future use and profit. He was aware that it had been the practice, in certain quarters, rather to decry the study of our national monuments, and to refer the young architect to his inspiration, to "the light of nature," and so forth. No more delusive and mischievous counsel could be given, for architecture, as well as poetry, had its alphabet and grammar, and it was as absurd to expect an original design from the architect who had not studied these as it would be to expect a poem from a man ignorant of language. It had been urged that knowledge acquired by the study of old work led to servility, and disposed the student to copy rather than to invent and design. How was it with the Mediæval builders in this respect? They were carefully trained up in one single school of art, and never had the liberty enjoyed by the architects of the present day, but yet they never copied each other. Of the thirty churches Mr. Sharpe and some members of the Association visited in August last in Lincolnshire, all within an easy distance of each other, and all erected within a short time of each other, there were not two of which it could be said that the principal features were identical. The saying which had been applied to the poet—*poeta nascitur, non fit*—applied equally to the architect. It was not the study of good work which produced copyism, but the inability to turn the knowledge acquired in such study to good account. No amount of study would compensate for want of talent and inventive ability. Mr. Sharpe then went on to observe that perhaps the title of the subject on which he had to speak had not been very correctly given by him in the syllabus, for though he should have to explain what use he made of colour for the purpose of making distinctions between different periods of architecture, he had much more to say of those distinctions themselves. His first business, then, was to point out what those distinctions were, and in order to do this it was absolutely necessary that he should have terms in which to express them. It was very desirable, moreover, to make use of terms which were already in general use, but this happened to be impossible to him, for the simple reason that none of the terms in general use at this time were applicable to at least two of the classes of buildings to which he had to call attention. He had been obliged, therefore, to invent terms to answer the purposes of the minute division of the subject he should follow. Those terms were contained in a little work he published many years ago now out of print ("The Seven Periods of English Architecture"). Of course no one who had paid any attention to this subject was ignorant of the fact that it was to Mr. Rickman that we were indebted for the terms now in use. Rickman divided the whole of our national architecture from the Conquest to the Reformation into four periods, which he called Norman, Early English, Decorated, and Perpendicular. It was no reflection on Mr. Rickman to say that that division (which had served its purpose so well since he wrote) was scarcely suited to the descriptive requirements of architectural writers at the present day, tor, in the first place, it did not include those specimens of Gothic architecture that were constructed during the forty or fifty years that elapsed between the first appearance of the pointed arch and the final disappearance of the circular arch; nor (secondly) did it enable us to distinguish and classify those buildings which were erected during the seventy years that intervened between the first appearance of tracery in windows, and the assumption by tracery of the flowing form which Mr. Rickman indicated as chiefly characteristic of his Decorated period. But during these two periods buildings were erected so unlike those of the other periods, and having such peculiar characteristics of their own, that it was impossible to classify them under or to describe them by the terms hitherto in use. It was, then, to provide a fitting place in architectural nomenclature for these works that he proposed, in the work referred to, the division of our national architecture into *six* periods instead of four. He passed over Saxon architecture, as its remains were so very fragmentary and in so imperfect a condition that their study was of very little if of any use to the architect; moreover, did such works exist in any number and completeness, they would possess scarcely any interest as works of art; the study of Saxon architecture, thereiore, was a matter chiefly of antiquarian interest. As regarded the nomenclature of the six periods into which Mr. Sharpe divided English architecture, he said that although everybody might be ready to agree that it was necessary to have these six divisions, every one might not agree as to the choice of the distinguishing terms of those periods. He attached comparatively little importance to the question of what should be the terms used, provided that any given term always meant the same thing. Therefore he did not say that the terms he proposed were the best that could be adopted, but until he was supplied with better he should continue to make use of them. The terms which he employed were:—(1) Norman; (2) Transitional; (3) Lancet; (4) Geometrical; (5) Curvilinear; (6) Rectilinear. He limited the buildings in the Norman style to those in which the circular arch alone prevailed. To the Transitional period he allotted a good many of the works which Mr. Rickman classed as Norman. In the Transitional period both the pointed and the circular arch prevailed (not indiscriminately, however) in the same building up to the end of the eleventh century, the former being used for arches of construction, the latter for arches of decoration. The Transitional period Mr. Sharpe placed as commencing at A.D. 1145, and coming down to 1190; the Lancet period as commencing at 1190 and closing at 1245; the Geometrical period as beginning at 1245 and ending at 1315. The lancet period was characterised solely by the lancet form of the windows. Mr. Rickman included in the Lancet period some buildings which were of the Transitional and some which were of the Geometrical periods. The Curvilinear period was distinguished by its flowing forms, the ogee, and the sinuous forms which appeared not only in the tracery but in all parts of the buildings of the period. Along with the changes of form in the outline would be found corresponding changes in the details. This was an important reason why architects should not mix the outline forms of one period with the detail forms of another period, for by so doing they missed the unity and fitness of purpose, so characteristic of every period of Gothic art. To do so, in fact, was just as bad as to make a solecism in language. No one would think of putting on to a Doric column a Corinthian capital. It would be like a line of poetry badly spelt. In the Rectilinear period the lines were not only vertical, but horizontal, therefore the term "Rectilinear" was, Mr. Sharpe considered, preferable to the term "Perpendicular," besides pairing well with the term "Curvilinear." Almost all the great cathedral and abbey churches of the country were divisible into three parts longitudinally, viz., choir or chancel, transepts, and nave. They were also laterally divisible into three parts, viz., the nave and two side aisles; this tripartite division was also visible in the elevation, which was contained in three stories or stages. These he proposed to call the ground story, the blind story, and the clerestory—terms which would explain themselves. Mr. Sharpe then proceeded to explain the various points which distinguished the several periods of English architecture from each other. He said that the difference between the buildings of the Norman and Transitional periods consisted chiefly in the much greater lightness of all the parts of those of the latter period. And here he would say that when he spoke of these absolute divisions or periods, it must not be supposed that he meant to draw a hard and fast line between one period and another. That was impossible, because architecture was constantly progressing, and therefore always in a state of transition, and that progress was never arrested. The windows of the Transitional period were also longer and narrower, and the intercolumniations were taller. The buttresses were more prominent. Mr. Sharpe then referred to the use of the pointed arch by the Mediæval builders. This arch was not invented by the mediævalists, as was popularly supposed, for it was to be found in Euclid, and its abstract form must have been known to geometricians in every age, because the intersection of two circles formed it. He was perfectly certain why it was adopted by the Mediæval builders, although he believed that about thirty theories were given in Britton's work on the subject—not one of them the correct one. In the early part of the twelfth century many of the large circular arches used for spanning large openings had given way. Who could find a chancel arch of Norman date that was perfectly true? As the builders of that period were never able to hew stones more than 18in. in depth, the sides of the voussoirs in arches of large span became nearly parallel, and it followed as a matter of course that in circular arches of a large span the centre voussoirs began to fail after a certain time. The maxim that "an arch never sleeps" should ever be borne in mind, for in course of time its lateral pressure would make itself felt. Many of the earlier arches in the Romanesque buildings abroad were not truly pointed arches, but were modifications of the circular arch, effected by simply raising the upper part imperceptibly. The Mediæval builders, finding the increased stability of the pointed arch, began to execute during the Transitional period pointed arches of two centres, but preferring as they did the form of the circular arch, they used the pointed one only in places where the stability of the structure required it. The "arches of construction" were always pointed, and the "arches of decoration" always circular. This was the invariable rule between 1145 and 1160, after which latter date the rule was not observed. During this period, in consequence of this simultaneous but discriminate use of circular and pointed arches, buildings presented a great contrast between their interiors and exteriors—

the former looking like Transitional work, and the latter like Norman. A fantastical Frenchman who had written upon the subject suggested that this appearance was due to a contest between the lay and clerical architects as to which form of arch should be adopted throughout the building, who, failing to agree, the matter was compromised by the inside being allotted to the clericals and the outside to the laity. In the latter part of the Transitional period the pointed arch was applied to arcading and panelling, as well as to window-heads and doorways. The Transitional period, said Mr. Sharpe, was a most interesting one for purposes of study, because it was found in every part of Europe. It was also in reality the first English architecture that existed. The Norman influence having somewhat subsided there arose an English school of architecture, in which the essential features of Norman work were seized upon and treated in a totally different way. Everybody was familiar with the Early Norman decorative forms—the chevron, the billet, and others. Many of these disappeared altogether, but one or two were seized upon and treated in a peculiarly interesting manner. Hitherto many of these modified and improved forms had been unjustly called Norman. The zigzag ornament at Selby Abbey Church, for instance, was not Norman, but Transitional work. In fact, there was no time when so much invention was shown as in the Transitional period. The abacus of the top moulding of the impost in the Transitional period was square, as in Norman work. Mr. Sharpe next called attention to what he termed the Transitional volute—the little curve which formed the termination of the leaf of the capital, which was curved upwards. That little ornament prevailed in England for about twenty or twenty-five years. It was universally used, being found at Jedburgh in the North and the Isle of Wight in the South. What was most wonderful was the way in which such ideas were circulated over the country in those days. This little volute was also to be found, and had been seen by Mr. Sharpe, in Sweden, in the South of France, and in Italy. He had now said quite enough about the Transitional period to draw attention to it, for after all it was for everybody to work out their own knowledge for themselves. He recommended the acquisition of a knowledge of architecture not only by reading, but by sketching and measuring. With this view he enumerated a few of the buildings of the Transitional period which would well repay attentive study. He instanced Malmesbury (where the pointed arch was first used), Fountains, Kirkstall, Buildwas, Kelso, S. Cross, Furness, the Temple Church (where the Transitional volute referred to might be found fully developed), Llanthony, Abbeydore, Selby, Byland, Jedburgh, Roche, Hartlepool, Glastonbury, Wells, the galilee of Durham Cathedral, Shoreham Abbey Church, and Chichester. It was during the Transitional period that true foliage was first developed, for in the Norman period the carved work upon the capitals was very rudely executed and with very little relief. At the close of the Transitional period builders commenced to have some idea of foliage growing out of the capital. In the Lancet or Early English period the lancet window was the prevalent feature. The circular arch had at that time entirely disappeared, or was only used by some accident or chance in building. The term "Lancet" was not applicable, as some supposed, to those pier arches which were extremely pointed in form, but to the windows, which were of the shape of a lancet blade. In the early part of the period these lancet windows were used singly; latterly they were used in twos and threes. The great progress of architecture during this period was clearly visible in the manner in which the builders connected three lancets together to form a window. Finding the head was very heavy, they perforated it with quatrefoils and cinquefoils, until nearly all the stone was cut away. In all the windows of the Lancet period, however, the true characteristic feature of tracery had not entered, because tracery only existed where the whole of the stonework was cut up, and where there were only moulded stone mullions left. The rage for windows of this kind which immediately seized upon the whole of the architects, not only of England but of Europe, was best shown by the great number of buildings to which it gave rise—all the noblest cathedrals of France belonging to that period. There was no more beautiful example of this in any part of Europe than we had in the presbytery of Lincoln Cathedral. It had been objected to this work that it was not lofty enough. Certainly the immense elevation that the French architects gave to their buildings astonished the mind, but it broke the neck of the spectator, for it was not possible to study the upper parts of one of their buildings without excessive fatigue. At Lincoln, on the other hand, every part of the work was completely within the reach of human observation and appreciation. In the Geometrical period Gothic art reached its highest development. Mr. Sharpe thought there could be no question that the beauty of the conventional foliage of the early part of that period was not to be surpassed anywhere. Nor did he believe that the art of moulding stonework was ever carried to so high a degree of perfection as at that time. They had no notion of moulding stonework abroad, and it was in this country alone that marvellous effects of light and shade were produced by that means. Mr. Sharpe said he could not help urging every architect to improve his knowledge of the mouldings of the period; they could be measured with facility by means of the little instrument called the cymagraph. It was during the Geometrical period that the first approach to the imitation of natural foliage was found. The maple, the oak, and the vine leaves were attempted to be copied, and from that point of time, Mr. Sharpe said, a certain decadence in the architecture of the country might be dated. He did not think that the forms in the latter part of the period were equal to those at its commencement. It was very much the fashion, said the lecturer, to refer the architect to Nature, but he contended that leaves were not suited for anything like exact representation in stone. He did not counsel the imitation of such forms in modern work. They were only suited to the worker in iron and brass. Foliage in stonework must necessarily be more or less conventionalised. He did not deprecate the study of Nature, but the work resulting from such study should be suited to the material in which it was executed. At the close of the Geometrical period the art of sculpture (as applied to the human form) was practised with great success, and at the beginning of the Curvilinear period this art was still progressing. In Lincolnshire, the churches at Heckington and Navenby, together with Lincoln Cathedral, afforded noble examples of this. Mr. Sharpe did not think that models even of Classical times could excel the sculptures of the Easter sepulchres in those churches.. On the whole, however, the churches of the Curvilinear period showed a marked falling off from those of the Geometrical epoch. The generality of Curvilinear churches were very plain. The carved bosses of the period were, however, good. The decadence of Gothic art was carried still further in the Rectilinear period. In the Curvilinear period the prevailing feature was the sinuous character of the tracery. In the Rectilinear period much greater harshness, coarseness, and squareness was found than hitherto. One redeeming feature was that the architects of this period took the liberty of finishing the upper parts of the buildings of their predecessors, and improved the sky outline by ornamental parapets and pinnacles, and therefore they deserved our thanks. One or two features characteristic of the Rectilinear period were as follows:—The four-centred arch came in during that time, also the Tudor flower; vaultings also became more elaborate. Having thus directed attention to the distinctions he wished to draw between the various periods of English national architecture, Mr. Sharpe proceeded to refer to the manner in which he represented these various epochs by means of colour. Professor Willis, he said, was the first person to employ colour in his ground plans for the purpose of distinguishing the parts of buildings which belonged to different styles and periods. The Professor, however, applied his colours indiscriminately, and simply for the purpose of distinguishing the work of one date from that of another. It had some time ago occurred to Mr. Sharpe, however, that the use of colour in this manner might be carried a point further, and, in fact, made much more useful, by attaching a fixed signification to the employment of different colours, and by causing a specific colour always to represent a specific period of architecture; and it appeared to him that no better basis could be taken for such an application of colour than the prismatic spectrum itself, which, in a twofold sense, was peculiarly adapted to represent the gradual progress of art in the buildings of the middle ages; first, because, as in church architecture, the progress was so regular and so gradual as to be almost imperceptible, rendering difficult the drawing of any exact line of demarcation between the buildings of one style and those of another, or to say, for example, where Norman art ended, and where English art began; so, in the prismatic spectrum, it was difficult to say where one colour ended and where another began. Yet inasmuch as it was necessary, for descriptive purposes, to call certain portions of the spectrum blue, green, yellow, and red, so, for the same reason, was it necessary to select and characterise in the same manner certain portions of the history of the continuous art of Gothic architecture, and to designate those parts by some such specific terms as those before proposed. And, in the second place, the adaptation of the prismatic spectrum for this purpose appeared to be a peculiarly happy one, inasmuch as English national architecture, rising out of the deep gloom of debased Pagan art in the dark age of barbarous invasion, was thus fitly represented as brightening gradually into the glory and refulgence of Christian art in the Geometrical period of the thirteenth century, and as deepening again in its descent through the three following centuries into the dark age of Pagan revival in the seventeenth century. He had, therefore, for some time, for purposes of his own, made use of the following selection of colours to indicate on the ground plans of churches the particular dates of the construction of their different parts, and he thought he could safely recommend it as a convenient one for general use:—

		A.D.		A.D.	
Norman	from	1066	to	1145	... Black
Transitional	„	1145	„	1190	... Blue
Lancet	„	1190	„	1245	... Green
Geometrical	„	1245	„	1315	... Yellow
Curvilinear	„	1315	„	1360	... Orange
Rectilinear	„	1360	„	1500	... Crimson

Mr. Sharpe exhibited a large ground-plan of Lincoln Cathedral coloured in this manner, and (in illustration of the use of colour in defining the dates of work in elevations) a large coloured drawing of the west front of that noble building. A plan of Horbling Church, Lincolnshire, was also exhibited. In that building every period of Gothic art was represented, owing to the frequent rebuilding of portions of the structure necessitated by the badness or rather total want of foundations. Mr. Sharpe said he must lay a great deal of blame upon the old masters in this respect. They seemed to have literally built upon faith. He believed that the reason why the Mediæval buildings still remained, despite their inefficient foundations, was to be found in the tenacity of their mortar—a subject to which we in the present day (though we provided good foundations) paid too little attention. In reference to the west doors of Lincoln Cathedral, Mr. Sharpe said that, as far as he could tell by comparing them as they now were with drawings made by him many years ago, they had not suffered so much injury as had been alleged by the scraping and "tooling" which they underwent a few years ago. He, however, maintained that for cleaning old carved stonework the use of anything harder than the cotton carding-brush or bristles was a great error. Mr. Sharpe then walked round and commented on the large number of full-sized sections of the mouldings of chancel arches and doorways in the most prominent buildings of each period of Gothic art in this country, those belonging to each period being coloured in accordance with the foregoing chromatic scale. These sections of mouldings (which completely covered the walls of the large gallery at Conduit-street) were brought upon paper, Mr. Sharpe said, by means of the valuable little instrument called the cymagraph, invented by Professor Willis, thirty years ago, but never used since its invention, except by the inventor, Mr. Sharpe, and one or two others. Mr. Sharpe said he had altered and improved it, as he thought, thus rendering it still more useful. In the course of his comments on the sections of mouldings exhibited, Mr. Sharpe strongly urged upon young architects especially the diligent study of mouldings, for most undoubtedly, he said, the history of architecture was written in its mouldings. It was in the varied forms and deep under-cuttings of its mouldings that English architecture first manifested itself. In conclusion, Mr. Sharpe expressed a wish that the Association, which possessed so much energy and vitality in its management, should put itself at the head of a movement which should have for its object the extension of a knowledge of the history of church architecture, not only amongst its own members, but amongst those numerous amateurs who had a strong desire to make themselves acquainted with the subject, and who had now the annual meeting of some local society only to rely upon. He should like to see the Association engaged in such a work.

On the motion of the Chairman, a vote of thanks to Mr. Sharpe was carried by acclamation, and the meeting terminated.

◆

NEW ELEMENTS OF HAND-RAILING.*

(*Continued from page* 366.)

Plate 10.—Construction of Stairs having One Step from Platform to Landing.

FIG. 1 shows the ground plan, the centre line of rail given. Have two balusters on platform. Let one stand in the centre. Set off from it the others, equal to half a step. The position of balusters regulates that of risers, as shown. Here the cylinder is 14in. Draw diameter A C. Let the right hand be on the rail going up the stairs. Then draw risers B and D. Set off width of step, and draw riser landing and that starting. Curve the ends of both.

Fig. 2 shows the steps and platform unfolded, standing in same position as those on plan. The diameter of circle indicated by A V and C 2. Set off from A V four spaces to equal O O on plan. Have risers B and D stand in same position as those at Fig. 1.

We have now the situation of platform and landing spread out, which shows that two moulds will be required for this wreath. The lower pitch being V, S, T, and the upper T Y 2. The line drawn from S, and running into ramp on landing, makes the upper part of wreath have equal pitches. The construction of mould for it is shown at Fig. 3.

Let each side of the right angle A, B, C, equal 2 6 below; or O O on plan. Join A C extended. This gives ordinate; because the pitches are equal, and the right angles A, B, C are tangents to a quarter circle.

Draw seat through C, and square with ordinate. Have B V parallel with it. Let height C O equal Y 6. Fig. 2 join V O extended. Make O S equal O V. Take a piece of board for the mould. Lay it on, and mark V, O, S. Square over the lines. Make V 2 and S T equal V B. Let O Y equal C A. Join T Y and Y 2 extended. These letters, to be correct, must equal those on pitches Fig. 2.

Find half the length of ellipse by making D C equal C B. Set off half the width of rail on each side of D. Square up to cut the pitch or major axes. Next, let O O equal A B. Set off on each side of O half the width of rail. Now find the points to insert pins, and strike the mould. One bevel answers for both joints.

Fig. 4 shows the mould for lower part of wreath. Extend one side of dotted square, say V 3. Let this equal V 3, Fig. 2. Next, draw from 3, touching corner of square. This gives the ordinate. Here, you perceive, the seat is made on lower corner of square, and at right angles with ordinate.

Have height from seat to pitch equal with 3 4, Fig. 2. The line through O intersecting seat, and ordinate is pitch and major axis. Complete the mould as usual. See that its tangents from V and T are equal with V, S, T, Fig. 2.

The angle on the right contains bevel for shank. Its application is shown on square section. Angle on the left shows the bevel for centre joint T. This completes the mould for wreath of platform.

It will be noticed that the construction we have just given takes up the least possible space on the drawing board. The seat being made on the lower corner of square, producing the same results as if made on the upper.

Fig. 5 shows the construction of a wreath starting from level floor. This has already been explained for a plan which is similar to that on the right of Fig. 1. Therefore a short explanation for these moulds is all that is necessary.

Let the under side of level rail J H be the same height above the floor, starting as that landing on the left. The height being regulated to suit the long baluster E on square step. Take any point on level rail, say H. Then set off four spaces from H to the left; each space equal to O O on the plan. This being done, H and N represent the diameter. Let E F equal corresponding letters on plan. Then form the square step. Let under side of rail rest on it. Set off half its thickness, and draw a line cutting through K. Join K J. This gives the pitches J, K, N. Next, find the heights by drawing through joint L, cutting at R and 2. Then 2 J is the height for level piece of wreath. Square over from N cutting at P. This gives P R as height for upper part of wreath, and N P directs its ordinate.

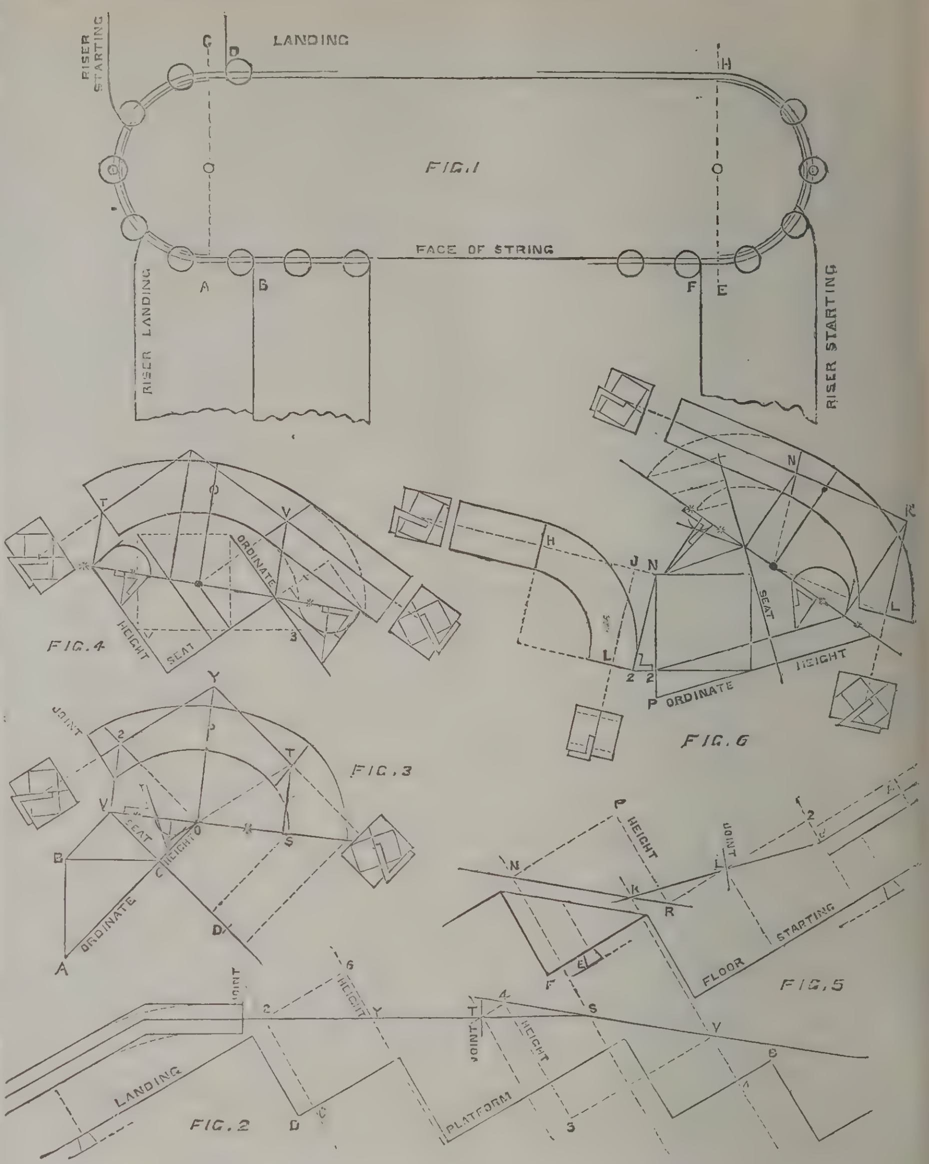
Transfer P N to extended side of square at Fig. 6, and draw ordinate extended. Make seat square with it. Let the height equal that below. Then draw the pitch. This done, lay the board on, and mark the intersections cutting the pitch.

Next, square over the lines, and find the points that give L K N. This, to be correct, must equal the pitches below, which have corresponding letters.

The square sections show the joints and application of bevels. The mould for level part of wreath is obtained by extending one side of square to the left, then let 2.2 equal 2 J, Fig. 5. Join 2 N forming the angle, in which is seen the bevel for joint on shank.

The square section on the left shows the application. The centre joint L, its square section, shows that the thickness of rail is parallel with the surfaces of the plank; and the slabs cut off from the upper and under side of stuff. The tangents H, J, L must equal the pitches at Fig. 5, where corresponding letters are seen.

Observe that the step and riser starting from the platform; the same answers for that starting from the floor on the right. Consequently, the cuts of carriages at both places are alike.



NEW ELEMENTS OF HAND-RAILING.—PLATE X.

◆

A church is to be built in Islington, London, solely for the use of children.

BUILDING NEWS SKETCH BOOK.

WORKSOP PRIORY CHURCH, NOTTS.

THE sketch shows the most easterly pier in the south arcade of the nave, with the junction of the different periods of building. The nave is at present used as the parish church, and that, with the chapel of S. Mary (commonly called the Lady Chapel), and some fragments of the Eastern parts, are all that now remains of a very extensive monastery of Canons Regular of the order of S. Augustine. The church was dedicated to S. Cuthbert, and afterwards (in part) to S. Mary, and founded in the year 1103. The circular column shown in the sketch, and the corresponding one opposite, with the bay to the east of them, and the tower arch and springings on the east side of same, are pure Norman. The nave westward is of later date, probably about 1170, and consists of circular and octagonal piers alternately, with continuous triforium and arches as shown, and two towers at the west ends of the aisles. **Edward Starr.**

◆

THE CHURCH OF S. ANDREW, PLAISTOW,

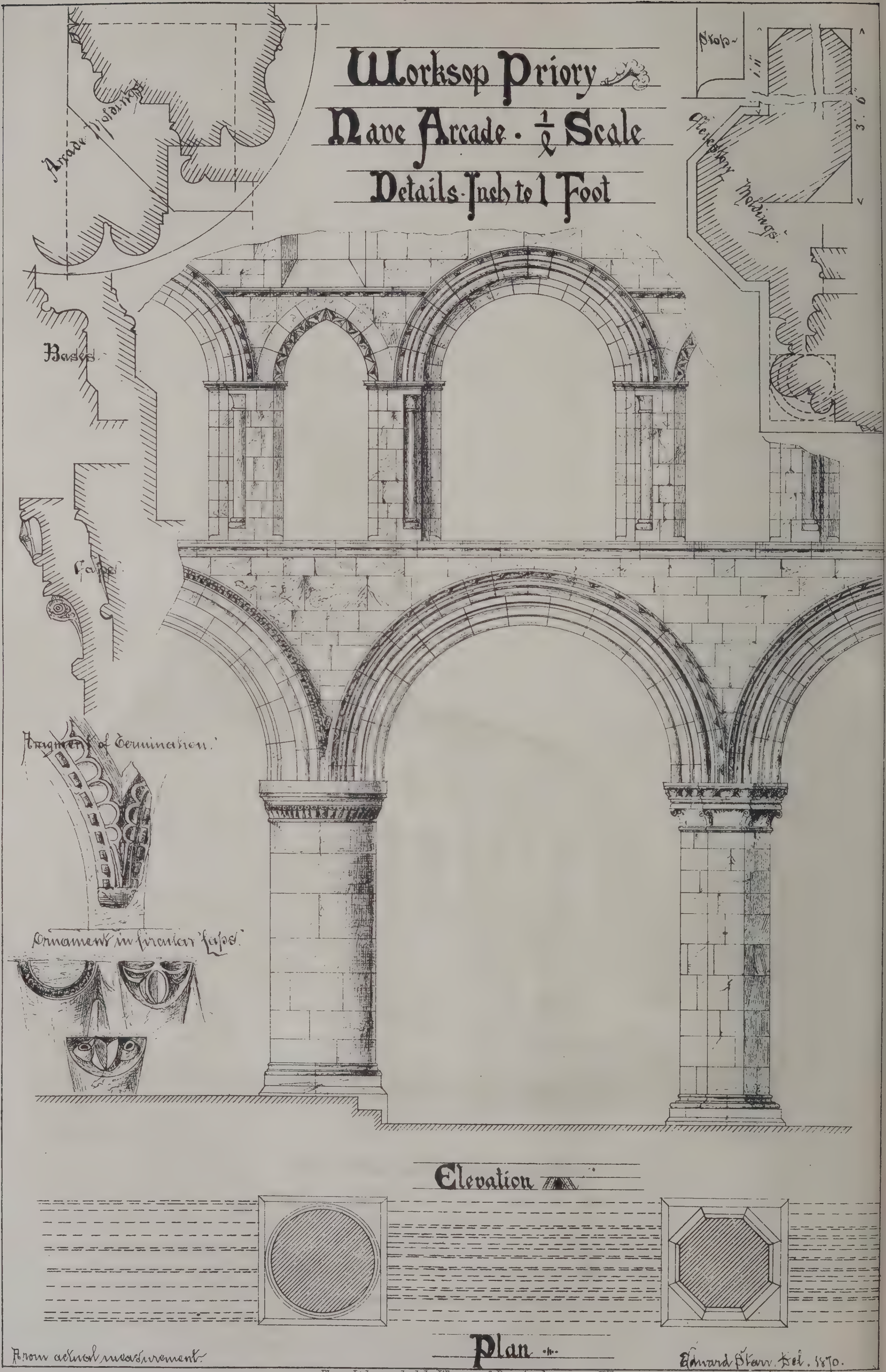
WHICH is the subject of our illustration this week, has been a considerable time in progress, the drawings having been made about four years ago, and was consecrated in July of the present year. A more detailed description and interior illustration of the church appeared in the Building News, on the 9th September last, No. 818.

◆

The handsomest railroad bridge in the West is said to be one just erected at Jamesville, Wisconsin, on the Chicago and North-western Railroad. It consists of four arches of 60ft. span, with keystone 80ft. above the water, built of solid masonry.

---

* This series of articles is a reproduction of Robert Riddell's work on the subject, published in Philadelphia, and by by Trübner and Co., London.



Worksop Priory

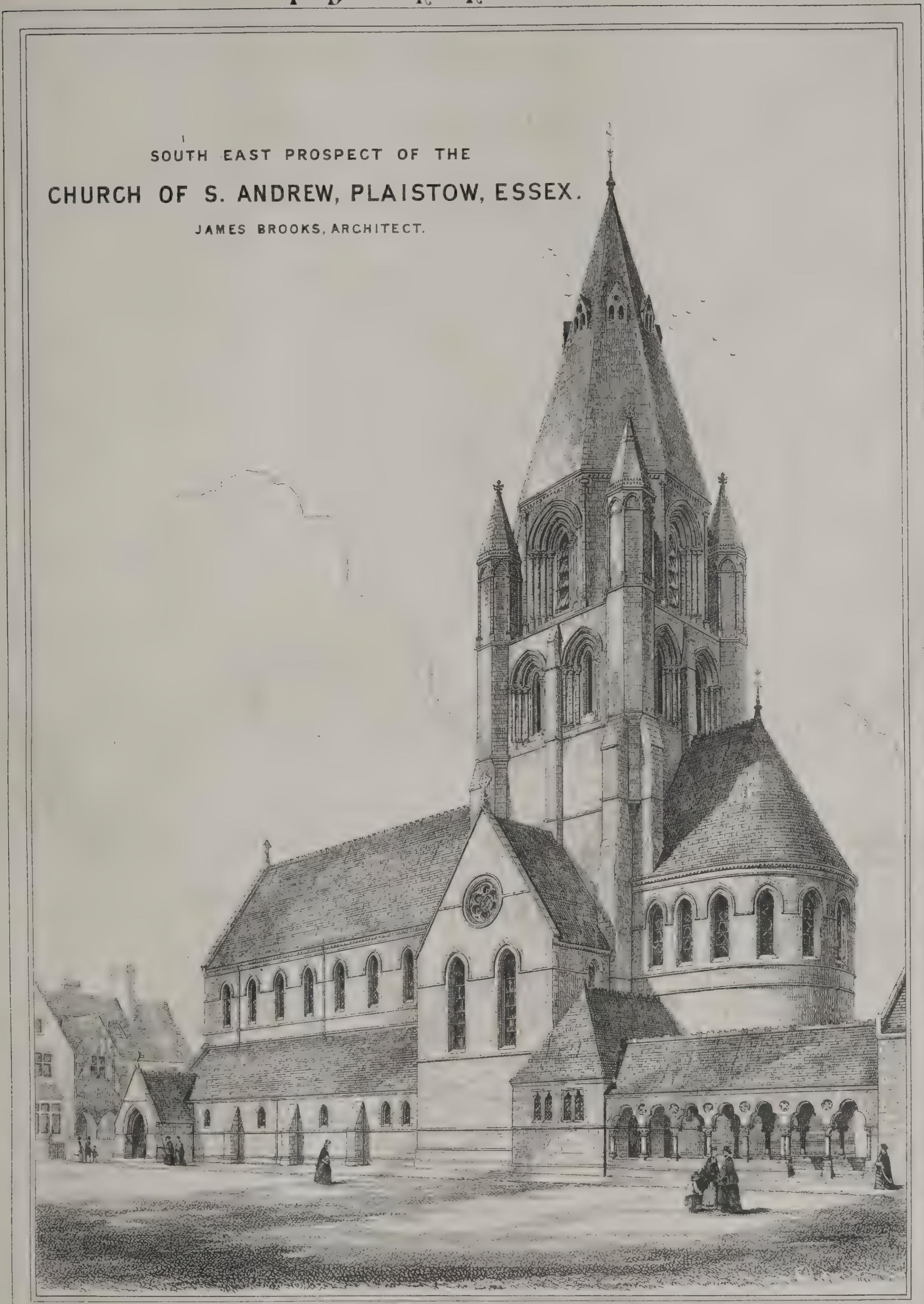
Nave Arcade · 1/2 Scale

Details · Inch to 1 Foot

From actual measurement.

Edward Starr. Del. 1870.

Photo-Lithographed by Whiteman & Bass, London.



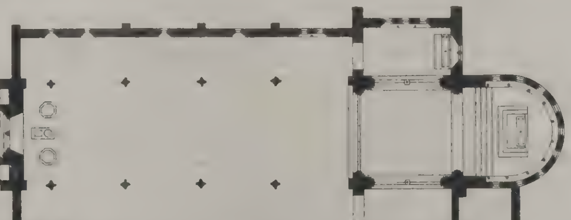
SOUTH EAST PROSPECT OF THE

CHURCH OF S. ANDREW, PLAISTOW, ESSEX.

JAMES BROOKS, ARCHITECT.

H Adlard Lith.

Printed by Whiteman & Bass



GROUND PLAN.

Furniture & Decoration.

HOUSE PAINTING AND DECORATION.

By "An Experienced Workman."

(*Continued from page* 354.)

DECORATIVE PROCESSES.

IN using stencil patterns there are two methods of working, the one by dabbing with the end of the brush, and the other by brushing. The first method will be easily understood from what we have before said. It leaves the colour deposited through the interstices of the pattern rough and thick, while the second method leaves the colour smooth, or comparatively so. In mixing the colours for stencilling, care must be taken to have it of a medium thickness; if it is too thin it will not cover or be solid, and will be liable to run under the edge of the pattern and cause the edges to be ragged; and if the colour be mixed too thick it clogs and gathers on the stencil plate and on the brush, and so spoils the work. If the work is to be done in dead or flat colour it should always have one-eighth part of oil added, in order to bind the colour fast. Ultramarine blue and all unground colours used without admixture with white lead or oil require to be bound with either oil and liquid driers, varnish, or quick-drying japanner's gold size. We do not advise the use of quick-drying colours in stencilling when it can be avoided, because they set and dry so quickly on the stencil plates that the sharpness of the design is destroyed, and the stencil plate requires cleaning so often that it soon becomes useless. The time lost in cleaning is also an important consideration. There are, of course, cases in which it is absolutely necessary to use these quick-drying colours, but they must not be used on oil paint if we are to produce good work. On the other hand, we have found in practice that we can make sharp, clean, and good work by using quick-drying colour for stencilling upon distemper grounds. We may, of course, use distemper upon distemper, but by using quick-drying varnish colour we produce sharp and solid work, especially as in using all strong colours the distemper absorbs the colour, and being quick drying there is not time for it to spread and form a stain, as oil colour on distemper will do.

In stencilling with distemper upon distemper, the ground colours require to be well bound, in order to prevent their being worked up in the act of stencilling, which is often the case, and thus shady work is produced instead of one uniform tint. Milk is a good medium for mixing stencil colours, and some colours will work well mixed with beer alone. Burnt or raw sienna, and all colours which are not of a spongy nature, require but little of either gluten or animal size to bind them, while ultramarine blue and like pigments require the size to be used pretty freely.

Oil paint upon oil paint stencils sharp, whether brushed or dabbed. In brushing, the stencil is used with very little colour, and in large patterns the brush is moved with a sliding motion over the edge of the pattern, taking care that the brush does not scrape against the edge; but in brushing over a small or intricate pattern, the stencil brush must be used lightly and with a circular motion, and with little colour in the brush. We are less liable in using the brush so to curl up the edges of the pattern or any sharp points or angles. The brush should be pressed upon the pattern, and only the extreme end of it should be used. We can by this method get a clearly defined outline, and a smooth surface to the pattern stencilled. In stencilling two or more colours with one stencil pattern, one colour should be first stencilled, and while stencilling the next colour, that part which has been previously done must be covered with a piece of paper, which may be held in one hand while the brush is being used with the other. It is best to cut this paper to cover the one colour completely while the other is being done, in order to keep the colour distinct; but if the wall space to be covered is large, it is desirable, when there are more than two colours, to cut separate stencils for each or some of the colours, and when the pattern is small and in stencil colours, this almost becomes a necessity. Stencil patterns must of course be fastened to the wall, ceiling, or other work to be decorated while being used. This is done in the best manner by using needle points such as are used for putting up gilt mouldings. Some use drawing pins and common tacks, but as all these have to be pushed into the body of the plaster or wood in order to hold the stencil, it will be evident that the thicker they are the larger will be the hole they will make; in fact, when thick tacks or even thick needles are used, the plaster breaks and leaves an unslightly hole. We have found it best to use fine needle points for the purpose. These may be either fixed into small wooden handles, that is, small pieces of wood about 1½in. long, square sided, and cut taper to the end where the needle is placed, or the needles may be pushed into the plaster by means of a small hollow key, The blunt end of the needle is dropped into the key with the point projecting, and is thus pressed through the stencil into the plaster.

The kinds of work which may be done with stencil patterns are many and various. In addition to the ordinary stencilling in colours, patterns may be stencilled upon prepared grounds in oil gold size, and the pattern gilt. In this case the size must be used sparingly and stencilled carefully, in order that the gold will lay on level and smooth, and leave no fat edges. Patterns may also be stencilled in stiff gold size, and while it is wet fine sand may be thrown upon it with a dredger, as described in a former article. By this means we produce a capital effect, the ground being smooth and the pattern rough or granular. If the whole of this is gilt we get a beautiful effect in dead and bright gold. Fine blue smalts, or any colour of powdered glass may be used in this manner with good effect. A very rich powder may be made for using in the manner above described in this wise:—A sheet of ordinary glass must be gilded with gold leaf, using isinglass as a medium to fasten it to the glass (which process we purpose describing in a future article); when dry it is polished; it should then be painted with black japan or any other quick hard-drying varnish colour; and is then placed in an oven to harden. When thoroughly dry and hard, the colour and gold must be scraped or chipped off the glass. If it has been properly done it will leave the glass in small dust scales, which will be burnished gold on one side and coloured upon the other side; these, being thrown or blown through or with a glass tube on to the stencilled gold size, adhere and have a brilliant, rich, and yet quiet appearance. Dead and bright patterns may also be produced. The groundwork may be highly varnished or even polished, and the pattern stencilled in dead or flat colour, or the ground may be dead and the pattern stencilled in pure varnish. By either of these methods we have a wide field for quiet decorative effect, as even the most declicate tint of colour may have a pattern put upon it which shall be quiet, unobtrusive, and yet rich. Scrolls, emblems, symbols, and inscriptions in church decoration may be prepared in the workshop by the artist and stencilled on the walls or ceilings by ordinary skilled labour, thus reducing the cost of such works considerably.

Stencil plates are also used for diapering upon glass in imitation of ground glass. The pattern is stencilled upon the sheet of glass in a varnish paint. The flux or white semi-opaque enamel is then brushed over the glass and made level, and spread evenly with a badger-hair brush; the glass is then placed in the kiln or oven and heated to the necessary degree to partially melt and secure the adhesion of the enamel. The heat at the same time destroys the paint with which the pattern is stencilled, and reduces it to a loose powder, which is brushed off, leaving the pattern in clear glass, and the ground semi-transparent. Another plan to effect the same object is to first spread the enamel upon the glass, and when it is set the stencil pattern is placed upon it, and with a stiff brush the enamel is brushed off the glass from all the parts which are not covered by the stencil pattern. It is then burnt as before. This plan may be used with advantage for wall diapering, by mixing the colour to be used so that it will be fast enough to allow the stencil pattern to be placed upon it without injury, and yet loose enough to allow of the colour being wiped away with a piece of flannel, or brushed off with a dry stencil brush or stiff tool. To effect this purpose, the colour should be mixed with japanners' gold size and turps, with just a sufficient quantity of raw linseed oil added to prevent its drying too quickly. The gold size (or a quick-drying varnish may be substituted) will cause the colour to set with sufficient tenacity to prevent injury if carefully used, and the oil prevents its drying hard, and gives the necessary time for working. Imitations of watered fabrics may also be done in this manner.

The methods used for transferring designs to works which have to be painted in with the pencil are different in some degree from that used for stencil work. The designs may of course be first sketched with charcoal in the manner described before, and may be traced directly on to the place they have to occupy; but the readiest and most generally used method is by pouncing. One half of the design is sketched correctly; it is then placed upon a deal or pine board, or upon a board covered with a double thickness of green baize, and the lines are pricked through with a fine needle as close as may be desirable. The perforations are made through the two folds of the paper at once, thus forming a complete design, or the paper may be folded several times and perforated through the whole of the folds, producing as many repetitions of the ornament as there are folds of the paper. When the design is pricked it is laid upon the work to be decorated, and any coloured powder may be dusted upon it by means of a pounce-bag. The fine powder penetrates through the perforations, and the outline of the ornament is traced in fine dots of colour. The pounce-bag is simply a fine colour or powder tied up in a double fold of fine muslin or thin calico; but the best plan is to use a rubber; this is made with a long strip of woollen cloth, old or new will answer the purpose; it should be about 2½ or 3in. wide; this is rolled up into a compact roll of about 1 or 1½in. in diameter, it is then tightly bonnd with string or twine in the centre so as to bind the whole tight together, leaving the ends free. It should then be cut perfectly level at each end: it is now ready for use. In using the rubber the end is charged with dry colour or charcoal in powder, and rubbed over the pricked design, which presses the powder through the perforations, but does not leave so much superfluous dust behind it as the pounce-bag does, and is consequently more cleanly in the working. There are, of course, many colours which are suitable for using in pouncing or rubbing, but it may be observed that if colour is used it is always best to use those which are the nearest in tone to the prevailing colour to be used in painting-in the ornament, for the reason that when the pounce colour is worked up in picking-in the ornament, it is not so much perceived as if it were of an opposite tone of colour. Ultramarine blue and powdered charcoal are the most useful for the purpose, as both of them can be dusted off the work and leave no stain behind them; whereas if we use Indian red or many other colours it is very difficult to clean the work after them, as most of them leave a stain behind. It is, however, advisable in most cases, when the colour of the ornament is laid in of a lighter colour than that with which the design is pounced, to draw the design slightly larger than required, so that the ornament may be painted inside the pounce marks, thus avoiding the dirty edge caused by the pencil gathering the colour of the pounce dots in working. This method is very useful for every kind of design, and especially so in all cases where the ornament has to be laid in and partly executed by those workmen (of whom there are many) who can use the pencil, but are not capable of originating any design. It will, of course, depend in a great measure upon the person who has to execute the work as to the closeness with which the design will have to be pricked. A first-class man only requires an indication of the outline, as he depends upon his pencil to improve and correct the design; and, in fact, he will design as he goes on with his work, only requiring the pounce dots as a guide to the distribution of weight and space; but with ordinary workmen the design will have to be pricked closely and carefully, in default of which sad blunders are often made. When the design consists of geometrical patterns, we prefer to trace instead of pouncing them. Greater exactness may be thus obtained. The back, or plain side of the design, is coloured with Indian red or vermilion in powder. This should be rubbed off again, leaving as little colour upon it as possible; it is then placed upon the work to be decorated, and the lines traced with a fine blunt stile or black lead pencil, which will leave the design in faint-coloured lines upon the work. In tracing, care must be taken not to press too heavily, in order to avoid making indentations in the paint.

◆

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE second ordinary general meeting of this Institute for the present session took plece on Monday evening last, Mr. E. I'Anson, Vice-President, in the chair. The usual formal business having been got through, Messrs. Edwin Bull and Walter E. MacCarthy were unanimously elected associates.

Mr. Benjamin Ferrey, F.S.A., then read a paper entitled

OBSERVATIONS ON THE WEST FRONT OF WELLS CATHEDRAL.

After a long description of the west front, Mr. Ferrey proceeded to indicate the measures that had been taken for its restoration. He said that it was to be regretted that the perishable nature of blue lias renders it unsafe to be used in the proposed restoration. The softness of its colour blending so well with the Doulting stone, points to it as the most fitting material, but after much consultation it has been resolved to use Kilkenny marble instead; its colour resembles blue lias closely, and of its durability no doubt can be entertained, as all the buildings in which it has been employed afford ample evidence of its excellent qualities. The Devonshire and other marbles possess a purple hue very unlike the blue lias, and where so large a number of columns, &c., are required, it is of the highest importance that the colour intended by the original architect should be secured. Those who have watched the condition of this great western portion of the cathedral have seen with deep regret the rapid decay going on from year to year. Every winter or heavy gale produces fresh mischief, and within a late period the fall of canopies and portions of the statues and bases has become dangerous to those daily passing by the north-west corner of the cathedral. It became absolutely necessary that some general examination should be made, to ascertain the safety of many other parts which had a threatening appearance. Mr. Ferrey was instructed by the Dean and Chapter to have a scaffolding erected, and make an examination of the condition of the niches and decorative portions of the two great buttresses of the north-west tower; this he did without delay, and reported to the Dean and Chapter in August, 1868. In his report he said that having made a careful examination of the condition of the north-west buttress to the west front, from the top to its base, he was enabled to speak, not only as to the insecure state of many portions of the buttress immediately contiguous to a canopy which had fallen, but also as to the perilous condition of many other details. It was of the utmost importance that every feature of this incomparable front should be saved if possible, but that could only be accomplished by a timely renewal of those parts of the design which are essential to the protection of others. By way of example he alluded to the abaci to the capitals of the upper series of niches, containing successive groups of figures, illustrating the Last Resurrection. All these abaci and their supporting columns were of blue lias, or some imperfectly formed marble; the former had *entirely disappeared*, not an abacus remained; and as a natural consequence, the wet having penetrated to the carved foliage of the capitals, the frost had materially damaged them, and *all* would be destroyed in a short time unless some steps were taken to arrest the progress of destruction. Again, although especial care was taken by the original builders to prevent the crushing or injury to the joints by the insertion of oyster shells into all the bedding-joints of the masonry, yet sufficient caution was not taken in placing the Doulting stone on its natural bed; hence in many places it had split and fallen, and there were *many parts* of the west front which must speedily become ruinous, and ought at once to be removed and replaced by good stone rightly bedded. It was not difficult to discover where this defective material was used, as a slight tapping on the face would crush the surface, already weakened by cracks and fissures, through which the weather penetrated.. It was important, Mr. Ferrey reported, that nothing should be done to this front but what was really essential to the conservation of the valuable artistic work which remained. Neither *new forms* nor *materials* of any kind should be permitted. A mere comparison of the engraving in Britton's work, published in 1824, with the state of the front in 1868, would show the ravages which time has produced; but time was not the sole cause of mischief. In former repairs, *cast-iron* ties and plugs were extensively used; these had done immense damage, and objects probably safe, if they had been left undisturbed, had been shattered by these injudicious efforts at protection. In any other precautionary steps, *copper* dowels and cramps only should be used. Mr. Ferrey advised the reproduction of the canopy which had fallen, and also the restoration of the opposite one attached to the corresponding buttress. This had for some time been gradually wearing away. Although this was the immediate work to be done, Mr. Ferrey could not but direct attention to the extremely critical condition of many details of this most beautiful portion of the cathedral. In the original design all the angular shafts of the buttresses and wall arcades consisted of a species of blue stone, which formed a most agreeable contrast to the Doulting stone, but unfortunately this had proved a very *perishable material;* in almost every case these columns have failed. At the time of his report the south-west and north-eastern buttresses were wholly without these essential features, and although the canopies to the niches retain their position and hang unsupported, yet at any moment they may fall with a tremendous crash, and do great injury. He therefore strongly urged the necessity of replacing these missing columns without delay; and further recommended the use of *some Devonshire marble* instead of Doulting (which in past repairs had been used), so as to carry out as nearly as possible the original intention. The inestimable value of the west front of this cathedral, as being undoubtedly the finest in England, claimed for it the utmost possible care; no measures for its preservation should be neglected. Nothing but the utmost vigilance could save it from the effects of time, which were then working slowly but surely its destruction. It was unwise to rest satisfied, and to suppose that because up to that time certain parts (which looked perilous) had not fallen, that therefore they were safe. In conclusion, Mr. Ferrey recommended that each part of the west front should be carefully examined and strengthened where necessary, and wherever it might be found needful to replace carved work, he felt confident that the new portions might be worthily assimilated to the old. In consequence of this report, the Dean and Chapter appealed for subscriptions. A committee was formed, and in order that no doubt should be entertained as to the necessity of the work, Mr. Scott's opinion was requested on Mr. Ferrey's proposal. Mr. Scott, at once, made an independent examination of the west front, and confirmed in every respect Mr. Ferrey's report, whereupon the work of repair was without loss of time commenced. Amongst the many repairs which have been carried out from time to time, much of the well-intended work was but indifferently executed; thus in substituting light-coloured stone for blue lias, as previously remarked, the beauty of the front has been sadly marred. The carving also, where renewed, is both lumpy and heavy, and wanting in the freedom and expression of the ancient work, and worse than all, in some cases (though happily few) where the heads of statues were wanting, modern ones have been supplied of the most miserable description; here and there arms have been stuck on in cement; but considering the large number of the statues, we may be thankful that so few have been deformed and disfigured by clumsy hands. Within Mr. Ferrey's own recollection some of the beautiful heads of the statues have been split asunder, the facial portion falling to the ground in numberless fragments. Mr. Ferry concluded his paper by a comparison of the west fronts of some of our English cathedrals and abbey churches which had been most adorned with sculpture. Taking Exeter, Salisbury, Lichfield, Crowland Abbey, and Bowden as examples, it would be found that the west front of Wells Cathedral supplied by far the most elaborately ornamented example in England.

DISCUSSION.

Professor Ansted said he knew Wells Cathedral very well, having made a very careful examination of it some ten years ago. From that examination, and from what he had been able to glean of the history of the building, he thought that the stone had very much deteriorated within the last thirty or forty years. At the time when Britton described the fabric, and (ten years later) when the Commissioners for selecting a stone for the Houses of Parliament examined it, it was described as being in a fair state of preservation, and the Doulting stone in the west front was referred to as a good material. The photographs which had been projected on to the screen showed clearly, indeed, that, taking it as a whole, this stone had lasted very well, and had been well selected. It was not to be expected that a building, however carefully it might be constructed with any of the ordinary stones of this country, would last without care for more than a few centuries. As fast as the original stones decayed fresh ones should be put in, and it was to be regretted that this had not been done in the west front of Wells Cathedral thirty or forty years ago, when (there was reason to believe) the whole of the sculptured work was in a far better state than now. He thought that it would be recognised as a highly important lesson in reference to material that the stone had really stood very well indeed for about four or five centuries, and that within the course of the last fifty years it had become so decayed as to necessitate its replacement. He noticed particularly the condition of the columns constructed (as it appeared to him) of the streaked lias, as compared with the condition of the Doulting limestone used for the purposes of sculpture, and it seemed to him that the lias had really stood quite as well in proportion as the harder, and probably better, stone. In fact, it had lasted so well in exposed situations that he thought it must have been adopted by the builders only after some crucial test. He thought that experience was against any delicate work in blue lias lasting fifty years in exposed places without great change. With regard to the material with which it was proposed to replace the faulty stones, Mr. Ferrey had stated that his intention was to use Kilkenny marble in the place of lias. It was possible that that might prove a very good material for the purpose, but it was also possible that it would not be a bit more serviceable than the blue lias. The earthy marbles that we had in this country were not very durable. They took a good face and polish, but the polish very soon disappeared, and he was inclined to think that when the frost got into them they soon went to pieces, for after all these marbles were only partially crystallised, and were liable to considerable variety of condition.

The Chairman asked whether the Doulting stone was an oolite of the same character as Portland stone.

Professor Ansted replied that it was a closely compacted oolite, but contained very few oolitic grains.

Professor Donaldson said he understood that the Kilkenny marble was not a marble at all. It was the name vulgarly given to a stone which was very hard and very difficult to work.

Professor Ansted said it was a very compact earthy limestone.

Mr. **G. W. Hemans**, C.E., said that in constructing a railway in the neighbourhood of Kilkenny he had used the stone of the district for the bridges, &c. It was a marble of a very hard texture, and capable of taking a very high polish. It was an exceedingly fine stone, and extremely durable.

Mr. **J. P. Seddon** (Hon. Sec.) having made a few remarks on the subject, Mr. Charles Barry proposed that the thanks of the meeting should be given to Mr. Ferrey for his interesting paper. Mr. C. F. Hayward seconded the proposition, which was supported by Professor Donaldson, who suggested that the names of Messrs. Flukes & Rudge (who had attended to illustrate the paper by means of the oxyhydrogen lime-light and photographic camera) should be associated with that of Mr. Ferrey. Mr. Hadfield, of Sheffield, also supported the proposition, which having been put by the Chairman was cordially agreed to.

Mr. **Ferrey**, in reply, said he regretted that the eminent sculptors, Messrs. Westmacott & Woolner, had not been present to criticise the statues which had been shown on the screen. With regard to the materials to be used for the restoration of the work, he said he could in some measure corroborate Professor Ansted's remarks as to the blue lias. It had certainly, in many parts of the building, stood remarkably well, but this had been in nooks, and not in any exposed situations, where he (Mr. Ferrey) believed it had totally failed in every case. He had at first stood out for the use of the blue lias, but when he saw how universally it had failed he was obliged to recommend the Kilkenny marble, which was selected, not only on account of its durability, but by reason of its colour harmonizing with the old material. One cause of the failure of the shafts he thought was as follows:—They were very long, and had no zones; they entered into a cup at the base, and the wet trickling down the faces of them lodged in the cup, and, in time, disintegrated the base of the column and loosened it, and the first gale of wind blew the shaft down. He had adopted the Kilkenny marble because there were so many instances in which that material had stood for many centuries as sharp as when put up.

The meeting then terminated.

◆

THE GLASGOW INSTITUTE OF ARCHITECTS.

A MEETING of the Council of this Institute was held on Thursday week, Alexander Thomson, Esq., I.A., President, in the chair. The attention of the Council was called to the following advertisement, which appeared last week in the Glasgow newspapers —

"Glasgow Corporation Waterworks.
"Design for Memorial Fountain.
"Important Notice to Competitors.

"Notice is hereby given that, in terms of a resolution by the Glasgow Corporation Waterworks Commissioners, it has been agreed that the cost of the proposed memorial fountain to commemorate the services of the late Lord Provost, Robert Stewart, Esq. of Murdoston, shall not exceed from £1,500 to £2,000, instead of from £2,000 to £4,000, as formerly advertised.

"Competitors are invited to make such modifications or alterations on their designs as may be thought proper, so as to bring the cost of erection within the restricted sum.

"The premium of £50 will be awarded for the design that may be considered by the committee as most suitable, but they do not bind themselves to erect the fountain for which the premium may be awarded."

It was stated that nine months ago the Commissioners advertised for designs for the memorial fountain, the cost not to exceed from £2,000 to £4,000, and mentioned that a premium of £50 would be given for the best; that about 50 designs had been sent in, involving in their production a large expenditure of time and money; and that nothing had been heard of the result by the competitors till last week, when the report of the proceedings of the Commissioners and the advertisement first above referred to appeared in the newspapers. The Council unanimously resolved "That the Commissioners cannot now change the conditions of the competition, and ask a further sacrifice of time and money, but are bound in justice to adhere to the terms of the original advertisement, to proceed to consider the designs given in, and to award the premium of £50 to the best." The Council instructed Mr. MacLean, the secretary of the Institute, to send an extract from the minutes to the Lord Provost, as Chairman of the Waterworks Commissioners.

◆

ARCHITECTS AND THEIR PLANS.

(From the *Times.*)

A QUESTION lately raised about the Palace of Westminster has just been reproduced in a case of more modest proportions, and conclusively determined. It will be in the recollection of the public that when Mr. Ayrton, on behalf of the nation, required the delivery of the plans and drawings of the Palace of Westminster, Mr. Barry, on behalf of his late father, declined to give them up. The argument employed was that such plans remained the property, not of the person who had bespoken and paid for them, but of the architect who designed and framed them, and the customary and recognised usage of the profession was appealed to in support of the pretension. We exposed at the time the unreasonable nature of the claim thus preferred, and suggested to our readers that they should protect themselves for the future in all such transactions by stipulating beforehand for the delivery of the goods ordered, as in all other trade bargains. We can now state that this precaution is, happily, needless. The presumption has been formally established in the opposite direction. Instead of its being necessary that an architect's employer should make terms for the delivery of his plans, it will be necessary that the architect himself should obtain his employer's consent to their retention. In the absence of any special agreement to the contrary, it will be held that these goods belong to the customer who purchased them, and not to the dealer who sold them. So it was ruled in the Court of Exchequer on Wednesday last, and certainly the law in this instance has proved itself the perfection of reason.

Mr. M'Gowan, a clergyman residing at Holmesdale, engaged the services of Mr. Ebdy, a professional architect, for the construction of a vicarage house on specified terms. The architect was to prepare the plans of the building and procure tenders for the execution of the work, his remuneration being graduated according to the following scale:—If the work was actually completed, 5 per cent. on the whole sum expended was to be paid as commission; if the tenders were given, but the work left undone, the commission was to be reduced to 3 per cent. on the estimated cost; and in the event of the scheme being dropped before the issue of tenders, the percentage was to be still further reduced to 2½. The pertinence of these stipulations to the point at issue consisted in the evidence which they furnished of a deliberate contract. Apparently there was some doubt from the beginning whether the house would be built or not, and the fees payable to the architect were regulated accordingly; but, inasmuch as this formal agreement between the contracting parties could be produced as defining their respective rights, it followed that any claim not based on the stipulations recorded must either be established on some special ground or rejected altogether. That is precisely what occurred. The work was terminated at a stage which left the architect entitled to a commission of 2½ per cent. on the estimated cost, and about this there was no dispute. Mr. M'Gowan wrote to Mr. Ebdy announcing the discontinuance of the project, and asking for the plans and the charges for preparing them. Mr. Ebdy duly delivered his account, but declined to deliver the drawings, alleging the custom of the profession as his justification for retaining them. It would have followed, of course, that Mr. M'Gowan, on these conditions of dealing, would have got nothing whatever for his money. He had agreed to pay so much for plans only, so much for plans and tenders, and so much for plans, tenders, and work complete. The bargain actually terminated at the first of these stages. Mr. M'Gowan, after buying his plans, found that he had not occasion to buy anything more, and so he wrote for his plans, and offered to pay for them. The architect was ready to take the price of his wares, but not to deliver them, on which his customer declined to pay, and an action ensued which puts the question at rest. The original trial had resulted in favour of the plaintiff, but leave was given to move in order that the court might deal with the true question at issue—the validity or invalidity of the professional plea.

On behalf of the architect the contention was that the usage of the profession gave him a right to the custody of the plans. He had given his thought and labour to their preparation, and he held them at the service of his employer for the purposes in contemplation; but his employer had abandoned these purposes, and the plans were not wanted. He had thus earned his money, and if his customer had actually received no consideration, that was his own fault. The drawings and specifications were entirely at his command if he desired to build; if he did not, they were of no use to him, and by the known usage of the trade, they were retained in the designer's hands. On the other hand, it was maintained that no trade usage either did or could justify the non-delivery of goods bought and paid for; that the real contract contained all the terms of the bargain, and that these terms included no such right as that now claimed by the architect. Consequently, such a right could only be affirmed on some pre-existing or overruling condition, and this was the condition sought in the prescription alleged to pertain to the profession. As a matter of fact, this usage or prescription could not be established to the satisfaction of the court, but the point was of comparatively little importance, since judgment was given on broader grounds.

It was held that the claim thus advanced by the profession was contrary to all reason. Baron Bramwell used even stronger words in characterising the pretension set up. "The usage contended for," said his lordship, "was impossible; he could not help saying that it was perfectly suicidal; so soon as it was brought into being it cut its throat with its own absurdity." We imagine these opinions will be shared by everybody who reads them. "In all common sense," added the learned baron, "a man is entitled to what he is compelled to pay for." So, indeed, we should think, and a more extravagant or intolerable trade rule than that alleged to the contrary was never devised by a trade-union. If it is not held to be "in restraint of trade," it certainly ought to be, but from this time forth the question stands on the simplest of footings. The privilege, or usage, or whatever it may be, of the architectural profession is summarily set aside, and if in future an architect expects or intends to keep the goods for which his customers pay instead of delivering them, he must secure that privilege, not by appeal to trade custom, but by the production of a contract to that effect on the part of his employer. Otherwise the presumption goes against him. It follows practically that any person building a house and bespeaking plans for the purpose will be entitled to the possession of those plans, unless he pleases to forego his rights in such respect by previous agreement. In that case there is no more to be said, but we should really like to see with what face an architect would venture to approach his customers with a direct and undisguised request for payment without delivery.

◆

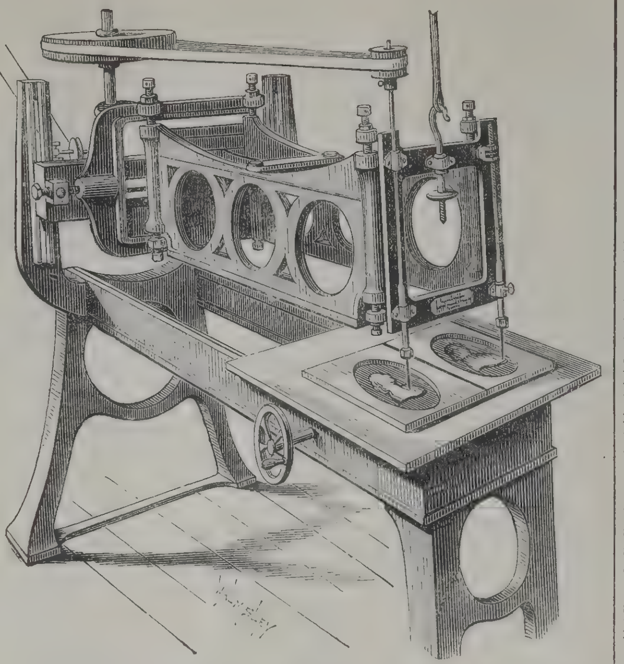
COMPETITIONS.

Church Plate.—We announced some time ago that Messrs. Cox & Sons (in conjunction with Mr. John Keith) had offered prizes of ten, five, and three guineas each for the best designs for a set of Communion service, to be executed for the approaching International Exhibition, members of the Architectural Association only being eligible to compete. At the meeting of the Association on Friday evening last, Mr. J. S. Quilter, hon. sec., stated that the committee had requested Mr. William White, F.S.A., Mr. A. Waterhouse, and Mr. E. J. Tarver, to act as judges of the designs sent in, which were eighteen in number. The judges reported that none of the designs sent in came up to the average standard of excellence which was exhibited in the design of church plate in the present day. Of the designs sent in, the the judges considered that the one marked "St. John" was entitled to the first prize; "Or," to the second prize; and "Pix," to the third prize. These were found to be by Mr. Wornum, Mr. Isaac Jones, and Mr. Frame, respectively. The judges, however, did not recommend that any of these designs should be carried out without being more or less modified.

◆

The foundation stone of a new rectory for S. Mildred's, Canterbury, was laid on Tuesday week.

CUNNINGHAM & DABB'S WOOD-CARVING MACHINE.



A WOOD-CARVING machine capable of satisfactorily executing not only ordinary work, but even statuary and other objects requiring under-cutting, independently of any artistic knowledge in the workmen, using it will probably astonish some of our readers and be welcomed by many. Such a machine has been introduced by Messrs. Cunningham & Dabb, and may be seen in operation at their works in Cadby's-buildings, Leather-lane, Holborn. It is convenient in size, weighing only from ½ cwt. to 3 cwt., according to size, and very cheap. It can be worked either by steam or a fly-wheel, requires no skilled labour, and performs the work with exactness at an expense of less than a tithe of the time and cost hand labour would involve. The machine we saw at the time of our visit has since been sold for the execution of oak carvings now erecting in the course of the restoration of Bath Abbey. The working of the machine is exceedingly simple. The work is placed under the cutting tool (shown side-by-side by the tracer), and the latter moved at will over the outline of the model. Each moving at the same speed and in the same directions as the other, a perfect copy is obtained. A revolving motion is imparted to the cutting tool by means of the band attached to the fly-wheel, and the necessary suspension is afforded by the adjusting spring shown. Suitable tables can be supplied for more elaborate work—statuary, and the like. The two forms of the machine which will probably command the largest sale are a small one for working on a lathe and suited to the requirements of amateurs,* and another, shown in our illustration, to meet the requirements of builders and others.

◆

ON ARTISTS' COLOURS AND PIGMENTS.

THE first course of Cantor lectures at the rooms of the Society of Arts, John-street, Adelphi, for the present session, commenced on Monday last. On that occasion Frederick S. Barff, Esq., M.A., F.C.S., and Fellow of the Cambridge Philosophical Society, delivered the first of a series of five lectures on "Artists' Colours and Pigments." Mr. P. Le Neve Foster occupied the chair. The lecture theatre was crowded.

Mr. Barff commenced by offering a few observations on the importance of the application of science to the fine arts. He said we could hardly look at the beautiful pictures of the old masters without a feeling of regret that we were unable to view them in all the freshness with which they left their gifted hands, nor was it possible to see without regret the ravages time had made on many of their most famous works. Unhappily this decay was not confined even to the works of the old masters alone, but the works of artists of the present day and of those immediately preceding them were fast losing that freshness and beauty which they originally presented. The causes which had produced these calamitous effects would be treated partially in that, but more fully in the succeeding lectures, and as far as possible remedies would be pointed out by which greater durability of colour might be obtained. The adoption of the means to be suggested, of course, rested with artists themselves, and to employ them with good effect would require study and a practical acquaintance with those branches of science which most directly bore upon their art. The artist's profession was one requiring a high development of the imagination and of the poetical feelings, but it was a great mistake to draw the conclusion that scientific pursuits deadened those feelings, for what could elevate a man's mind more than earnest inquiry into the secrets of Nature in all its different forms? Such pursuits would not only repay the artist in the control which they would give him over the materials he had to employ, but open out a new field of beauty from which he might gather ideas for the enrichment of his works. Not merely were artists interested in the permanence of their works during their own life-time, but as they lived perhaps as much for the future as the present, they had every reason to feel a keen interest in securing the lasting durability of their works. It was mournful to contemplate the pictures of Turner, and of Sir Joshua Reynolds, and see the gradual fading of their original beauty, owing to their lack of this important requisite. Had they not, then, in the face of these facts, cause to urge upon their instructors the importance of turning their attention to the study of science, which would greatly help them in painting vehicles and painting grounds so that their pictures might escape the fate of their predecessors? Unlike the writer's, the artist's works could not be printed, and with the latter's death died all knowledge of his works, except what was handed down by tradition. All of them must be familiar with Longfellow's touching lines on the artist of Nuremberg:—

> Here, where art was still religion, with a simple reverent heart,
> Lived and laboured Albrecht Durer, the evangelist of art.
> Hence, in silence and in sorrow, toiling still with busy hand,
> Like an emigrant he wandered, seeking for the better land.
> *Emigravit* is the inscription on the tombstone where he lies.
> Dead he is not—but departed—for the artist never dies.

It was that the artists of the present day and of future times might be enabled to obtain this immortality for their works that he was there that evening to advocate the claims of science as the handmaid of art. After these preliminary observations, Mr. Barff proceeded to consider the nature of colour. What was colour? Had it any property inherent in matter, or did it belong to matter? The lecturer then, by a series of experiments (in the showing of which he was greatly aided by Mr. Ladd and Mr. Taylor) demonstrated that colour did not necessarily depend on chemical composition or upon material arrangement. Heat would change a colour, and friction would restore it again to its original hue. Upon what then did colour depend? It depended on all these circumstances combined; and in order that the artist might be able to appreciate the quality of the colours he was using, and their nature, it appeared to him to be necessary that he should be acquainted with those agents which influenced the colouring materials with which he had to deal. What he wished most earnestly to impress upon his hearers was this,—that not only did a knowledge of the reactions of chemistry enable the artist to understand the nature of the colours with which he had to work, but it enabled him the better to master those kindred branches of knowledge—viz., heat and light, which were also of great moment. After describing how the sense of colour was created in the human vision, Mr. Barff said that only a day or two ago he was talking to Mr. Benson, a gentleman who had devoted much attention to the science of colour. Mr. Benson explained to him the system which he advocated. He said it had always been the popular belief that the three primitive colours were red, yellow, and blue; but in his work on the "Science of Colour" he proved (and successfully to the lecturer's mind) that the primitive colours were not red, yellow, and blue, but red, green, and blue—red at the bottom of the spectrum, green in the middle, and blue towards the end. Mr. Benson had also devised some experiments illustrative of this, by which artists might be able to tell whether the pigments with which they were dealing were pure colours. The experiment consisted in laying on a dark ground a piece of cardboard covered with a strip of colour, and then, on looking at it through a prism, the artist would see a perfect spectrum; and in the centre a variation of the spectrum. If the colour was pure, say in the case of vermilion, he would see the red rays only in the centre; and if impure, he would see a mixture of rays. The use of this ingenious method of testing colours was obvious to every artist. In conclusion, the lecturer said he had tried to give his hearers some idea of what colour consisted. He had shown that it did not consist in the composition of the substance alone; nor in its molecular arrangements; nor in its having water present; nor in its being in a state without water; but that it might depend on some or all of those conditions, and that it was the duty of those who had to deal with colours to study chemistry, physics, and those sciences which would teach them the influences which each particular science bore upon their knowledge of that subject. He had also tried to show that colour really depended upon the reflection from the substance conveyed to their minds by certain luminous rays, by which he meant that the red was a sensation from a red pigment, and was conveyed to the eyes by the absorption to a great extent of the other colours of the spectrum, and that the red alone, or nearly alone, was reflected back again to the eyes, and that that was the same with all colours. He had also shown that in studying colours, the artist should be careful to investigate the properties of light, and the way in which it acted upon the substance with which he had to deal. Finally he had shown that the shadows produced by a rough surface were different from those produced by a smooth surface.

As we have already intimated, the lecture was illustrated with numerous experiments, some of them indeed being of a brilliant character.

◆

CHARACTERISTICS OF ENGLISH CATHEDRALS.

TO dispute which church ought positively to take the first place is idle. Each church has its own merits and its own faults (says the *Saturday Review*), and there is none which can be put forward as undoubtedly surpassing all others in every respect. And, provided the merits and defects of a building are thoroughly understood, the process of striking the balance between them is very much a matter for each man's personal taste. The question certainly does not lie wholly between York and Lincoln. For harmony and unity of design there is nothing like Salisbury; for majesty of bulk and variety of style there is nothing like Ely. Perhaps no one will argue that S. Albans is the most beautiful church in England, but it is an undoubted fact that it is the longest. For overwhelming internal effect Westminster rises above all, but then the mass of mankind do not look on Westminster as a church, or as a building at all, but simply as a place for the display of monuments. Lichfield is very low, and outrageously long for its height, but the grace of its three spires is unequalled. For a wonderful fusing together of the effect of the earlier Romanesque and the later Gothic there is nothing like the nave of Winchester. Peterborough has its unrivalled western portico; Canterbury has the noblest of central towers. Norwich would hardly receive the first honours from any one, unless haply at the hands of some most patriotic East-Angle, but it is well to remember the existence of so great and magnificent a church, which very few people out of East Anglia seem to know anything about. The Cathedral church of Durham has perhaps a better-founded claim than either York or Lincoln to rank at the head of churches of its own style. The Norman form of Romanesque has, both in England and in Normandy, produced a series of churches of wonderful size and grandeur—Jumièges, Ely, Peterborough, Gloucester, Tewkesbury, Southwell, Norwich, and the twin minsters of Caen. But Durham, as a specimen of Romanesque, is above all of them.

◆

The North London Railway.—This company, with the view of accommodating the passenger traffic, are building new and commodious stations at suitable and convenient points along their line. Amongst others, a new station has just been opened at Barnsbury. The station, which is very extensive, and comprises a station-master's residence, is situated in the Roman-road, Barnsbury, some few hundred yards from the old Caledonian-road Station, which is now closed.

---

* Illustrated and described in the *English Mechanic*, Sept. 23, 1870.

Civil Engineering.

◆

DESCRIPTION OF THE COFFERDAMS USED IN THE EXECUTION OF NO. 2 CONTRACT OF THE THAMES EMBANKMENT.*

THE contract upon which these cofferdams were used was let by the Metropolitan Board of Works, in January, 1864, to Mr. A. W. Ritson. It extended from the landing pier at Waterloo-bridge to the eastern end of the Temple Gardens, a length of 1,970ft. Mr. J. W. Bazalgette (M. Inst. C.E.) was the engineer-in-chief, and Mr. Edmund Cooper (M. Inst. C.E.) was the resident engineer; the author of this paper having charge of the works for the contractor. The breadth reclaimed from the river by this portion of the Embankment varied from 110ft. to 270ft.; the depth of water, when the tide was low, in front of the wall averaged 2ft., and the rise of tide was 18ft. 6in. The borings showed the bed of the river to consist of sand and gravel, resting upon the London clay, at depths varying from 21·58ft. to 27·10ft. under low-water mark, whilst the foundation of the wall was in all cases designed to be carried down to a depth of 14ft. under low-water mark. It devolved upon the contractor to design dams to the satisfaction of the engineer, who reserved to himself the power to adopt either caissons or cofferdams. The author considered that dams of timber and puddle would not only be cheaper, but could also be more expeditiously constructed, than iron caissons; and having succeeded in obtaining the engineer's sanction to one of the plans which he submitted, the work was begun.

The Temple Pier was the most important work in the contract, and it was therefore requisite to lay its foundation dry as soon as possible. To effect this two short dams, one at each end of the pier, completely enclosing a short length of the river wall, were first begun. No 1 was 111ft. 6in. long by 25ft. broad, inside measure, and No. 2 was of similar breadth, but a few feet longer. These dams consisted of two rows of piles of whole timbers, averaging 13in. square, with a clear space of 6ft. for puddle. The piles were from 40ft. to 48ft. in length, having cast-iron shoes 70lb. in weight, and were driven 4ft. into the clay. Cast-iron was used in preference to wrought-iron for the shoes, as giving, at an equal cost, a much larger base for the timber to rest upon. Where the driving was difficult, shoes having cast-iron bases and wrought-iron straps were employed. The piles were secured by three rows of walings of whole timbers, 13in. to 14in. square, through which and passing through the puddle space, at distances of 6ft. 6in. horizontally, were bolts 2½in. in diameter in the lower waling and 2in. in diameter in the middle and upper walings. Cast-iron washers, 9in. in diameter and 2¾in. thick, were used to distribute the pressure over a large surface of the walings. To avoid the difficulty of having to procure a number of long timbers, the piles were in a few cases only of the full length required, and the others, after being driven, had lengthening pieces fixed to them, so as to raise the dam to a height of 4ft. above the high-water line. Before proceeding with the construction of these two dams the ground was not dredged, but in all the dams subsequently constructed the sand and gravel were cleared off to the level of the clay before the piles were driven. Where the ground had not been dredged, great difficulty was experienced in driving the piles, and in the two dams in question one-sixth of the whole number pitched, having shown symptoms of failure, were drawn. In all cases the piles so drawn were observed to have cast their shoes, and their lower extremities were usually bruised into a mass of tangled shreds. The failure generally occurred when the piles were passing through a bed of compact sand, resting upon coarse open gravel. Beneath the gravel, and resting upon the clay, was a layer of septaria, which offered a serious impediment to the passage of the piles; but when once the clay was reached, the driving was comparatively easy. The space between the piles was dredged to the level of the clay and filled with well-tempered puddle. The transverse struts, of which there was a tier to each waling, were of whole timbers, 8ft. apart in the length of the dam.

Simultaneously with the construction of these dams, the filling-in of the space behind the Temple Pier was going on, the line of the dam was being dredged, and the driving of the piles begun. The Temple Pier, 470ft. in length, was irregular in outline, projecting in some parts upwards of 30ft. in advance of the river-wall, and the breadth across the foundation trench in the centre part was 57ft. To avoid the necessity of having to use a large number of struts of such great length, this dam was strengthened by means of buttresses of piles, somewhat similar to those used in the cofferdams constructed for the Grimsby Docks (*Vide Min. of Proc. Inst. C.E.*, vol. ix., p. 1.) These buttresses were placed at intervals of 20ft., and were backed up by struts extending across the foundation of the pier. The scantlings of the timbers and the sizes of the bolts in this dam were similar to those in dams Nos. 1 and 2, the walings only being a little stouter, averaging 14in. square.

Before No. 3 dam was completed, No. 4 dam was begun, and was followed by dams Nos. 5 and 6. In these and all the dams, except No. 3, the inner row of piles was placed so as to coincide with the riverward face of the concrete in the foundation trench. The piles, walings, and bolts of these dams were similar to those in dams Nos. 1, 2, and 3; but the shoring was of a different character. Across the breadth of the wall the struts were all horizontal, and abutted against walings of whole timbers, bolted to pairs of piles, driven into the solid ground behind the foundation of the wall. These coupled piles were placed at distances of 18ft. apart from centre to centre, and were further supported by three back struts to each pair, two of which were horizontal and one raking. These struts abutted against piles driven into the slope of the filling material, and backed up with rubble stones. From the lower waling to the bottom of the trench, or to the solid ground, the space in all the dams was filled up with clay, or with a mixture of clay and gravel, to give further stability to the dam, and to assist the lower bolts to resist the pressure of the puddle. Sluices of 4½in. elm plank, and having hinged flaps, were inserted in each dam, through the piles and puddle at the level of the lower waling. For dams Nos. 1 and 2, these sluices were 8in. by 8in., internal cross section. In the Temple Pier dam there were two sluices, 3ft. high and 1ft. wide, and for each of the other dams there was one sluice of similar section. In the Temple Pier dam, two iron cylinders, 8ft. in diameter, were sunk to a depth of 4ft. below the lowest level of the foundation, for pump-well, and in each of the other dams one such cylinder was sunk. The volume of water lifted out of the Temple Pier dam varied from 620 gallons to 1,200 gallons a minute, according as a less or a greater area of the foundation was exposed; but in all the other dams there was much less water to be pumped. As soon as the walls in any of the dams had been raised 6ft. above low-water mark, no further pumping was needed, as the water which gathered when the tide was high was passed through the sluices at low water. Murray's chain pumps were used in all cases, and were found to be very efficacious. In cofferdams there was usually a frequent settlement of the puddle, producing channels underneath the bolts and a consequent leakage. In such cases holes were bored with a 3in. auger through the inner row of piles, immediately below the tie-bolts, and pellets of clay were driven through these into the puddle until the leakage was subdued. The quantities of material used in the dams were:—In the Temple Pier dam, timber 152 cubic feet, iron 285lb., and puddle 9 cubic yards per lineal foot of dam. In the other dams, timber 117 cubic feet, iron 202lb., and puddle 9 cubic yards per lineal foot of dam. The staging from which the dredging was executed and the piles driven consumed 19·6 cubic feet of timber and 13lb. of iron per lineal foot. Sissons' & White's steam-pile drivers, and those of Appleby Brothers, were used, in addition to others wrought by manual labour. The cost of driving was a little under 4d. per foot of the pile when the ground was dredged, but was much higher where the ground was not dredged. The preparation of the piles cost ⅞ths of a penny, and the fixing of the walings and shoring 4½d. per cubic foot, exclusive of the cost of fixing the tie-bolts.

In estimating the pressure to be resisted, and the requisite strength of the dam, the depth of water was taken at 22ft., the piles were assumed to be 12in. square, and the struts 13in. square. The weight of a cubic foot of the dam was estimated to be 100lb., and the breaking strain of the timber, measured by a load upon the middle of a bar 1ft. long and 1in. square was taken at 400lb. The pressure of the water was found to be 15,125lb., or 6·752 tons per lineal foot of dam. The momentum of the water tending to overthrow the dam was 110,916, whilst the momentum of the dam itself was 83,200. It also appeared that if the dam had been 9·23ft. instead of 8ft. in thickness it would, considered as a wall, have been, in relation to the pressure of the water, in a condition of equilibrium. The resistance of the piles to fracture at the ground line was calculated to be 47,127lb. in relation to a force acting at the centre of pressure of the water. If one-third was taken as a safe load, the result was 15,709lb., to resist a pressure, as before stated, of 15,125lb. Disregarding these resistances, and reckoning the whole pressure of one bay to act upon each strut, the thrusts were—on the lower strut 222·82 tons, on the middle strut 77·5 tons, and on the upper strut 47·94 tons. But with every strut resisting an equal pressure the load on each would be 26·14 tons. For the pressure of the puddle on the tie-bolts the author had no satisfactory data, but he assumed it to be less than that of a similar section of water, and approximately the load upon the tie-bolts was calculated to be, at all events, less than the following amounts:—On each lower bolt 2½in. in diameter, 85,250lb.; on each middle bolt, 2in. in diameter, 54,875lb.; and on each upper bolt, 2in. in diameter, 37,625lb.

When the dams had served their purpose, it became necessary to clear them away, and before the completion of the whole series the removal of those first constructed had been begun. The piles in front of the ordinary wall were cut off at a level of 3ft. under low-water mark, and those in front of the Temple Pier at a level of 7ft. under low-water mark. The removal of the piles and puddle was effected in the following manner:—Upon the tops of the piles of each side of the dam half beams were fixed, and upon these rails were laid so as to form a road, upon which the steam cranes and dredging machines to be used in the removal of the puddle could travel, and upon which the pile-cutter could also be moved. These machines were successively placed in position, and the work was begun. For the first 15ft. in depth the puddle was filled into skips, and hoisted by means of steam cranes. Below that depth it was dredged by the machines which had been used for excavating the trench. When the puddle had been cleared away to the requisite depth the pile cutter followed and performed its part of the work. This machine consisted of a platform upon a stout frame, resting upon four wheels, which travelled upon the rails before mentioned, and carrying a steam-engine with the requisite machinery for driving a circular saw, which was fixed at the lower end to an upright spindle, and adjusted to the proper level. The spindle was placed between the two rows of piles, and revolved in guides at the end of movable arms, so arranged that it would shift to either side of the dam by turning a handle, and by the same motion it could be pressed towards the pile which was being operated upon until it was severed by the saw. Two piles were usually cut off on each side before the machine required to be moved backwards on the rails. When the way was clear for the pile-cutter, and a sufficient length of dam dredged, sixty piles could be cut off in a day, but the excavators could not keep pace with the pile-cutter, and the average number of piles actually cut off did not exceed thirty-six daily. The machine was devised by Mr. Charles Murray, of Loman-street, Southwark, and the author, but the motion which regulated the position of the spindle was the invention of Mr. Murray alone, and was patented by him. The total cost of the removal of the dams was £1 4s. per lineal foot, made up thus—clearing out puddle, 13s. 6d.; dredging outside of dam, 7s. 6d.; cutting off piles, 3s. per lineal foot.

◆

TESTS OF METALLIC BRIDGES.*

THERE has been hitherto no definite and settled official rule for testing metallic bridges on common roads. Sometimes the old rule is adopted of submitting the bridge to a uniformly-distributed load of 400 kil. to the square metre.

A late circular contains tests well defined, as follows:—

(1.) Metallic trusses should give passage to every vehicle authorised by the regulation of August 10

---

* Abstract of paper read by Mr. T. D. RIDLEY, A.I.C.E., before the Institution of Civil Engineers, November 8 last.

* From *Van Nostrand's Magazine* (translated from *Revue Industrielle*).

1852; that is, to vehicles drawn by not more than five horses if they have two wheels, and by not more than eight if they have four wheels; 11 tons load is allowed for two-wheel waggons and 16 tons for four-wheel waggons.

(2.) The dimensions of the parts are calculated so that the work of the metal per square millimetre under the maximum load is limited to 1 kil. for cast-iron working by tension: to 5 kil. for cast-iron working by compression; to 6 kil. for wrought or plate-iron, both for tension and compression.

Higher figures are permitted for large bridges, when justified by quality of metal, form, and disposition of pieces.

(3.) Each metallic bridge is subjected to the following tests:—The first, by load uniformly distributed, is made by an additional load of 400 kil. to the square metre of floor, footway included. This load should remain for at least eight hours, and in every case until depression has ceased.

The second proof is for rolling road, and is made with waggons of two or four wheels, with maximum load, teams attached and walking. These are to move close, in as many files as the carriageway will allow. All should then stand on the floor for half an hour.

These regulations, made because of late accidents, will make the construction of metallic bridges more onerous than hitherto, especially for small structures. For large works above 20 metres long there will be no difference.

THE CONTAMINATION OF WATER BY SEWAGE.

SOME important experiments on water contaminated with sewage have been made by Mr. Charles Heisch, the bearing of which is to simplify very much its qualitative analysis. A manufacturer of lemonade, finding suddenly that he could not keep his beverage more than a day or two, and unable to understand the reason of this, called in the aid of Mr. Heisch. The mischief was traced to the water, and it was afterwards discovered that an almost inappreciable quantity of drainage had reached the well which was being used. Following up this clue, Mr. Heisch believes he has discovered a method whereby sewage, almost in the smallest possible quantity, may be traced in water. Six drops of clear sewage were mixed with 10,000 grains (rather more than a pint) of West Middlesex and New River water. To six ounces of this mixture ten grains of pure sugar were added. The same quantity of sugar was also added to six ounces of water without any sewage. In from twenty-four to sixty hours the first mixture became turbid, and revealed in the microscope certain forms of cells, grouped in a manner which Mr. Heisch regards as characteristic. The water without sewage remained clear and sweet. One drop of fresh urine in 10,000 grains of water yields a mixture which will keep for several weeks, but the addition of sugar will induce the appearance of these cells in from twenty-four to forty-eight hours. Mr. Heisch states that filtering through the finest Swedish paper did not remove the germs, nor was boiling for half an hour any more effectual. Filtration through charcoal seems alone to have been found capable of removing the impurity.

THE NEW MINT.

PARLIAMENT is next session to be asked to sanction the erection of a new Mint on the Thames Embankment. The site selected is on the City side of the Temple Gardens, next to the Gas Works. We believe the ultimate removal of the Gas Works is settled; if not, they cannot exist side-by-side with the new Mint. The possible danger to so important a public building as the Mint from fire and explosions forbids so close a connection. A daily contemporary credits Mr. Lowe with the "beneficent design of shaming the Gas Company out of countenance." If he succeeds he will certainly deserve our thanks. Gas-works are altogether out of place in the centre of the metropolis, and those immediately in question are scarcely a less disgrace to the river and the Embankment than the railway bridges. The location of the Mint on the Embankment is certainly a great improvement on the original idea of removing it to Somerset House, from an architectural point of view, while business men will notice that it will be almost centrally situated between the Government offices and the Bank of England. One word to Mr. Lowe, though; no second attempt, please, at any utilisation of Inigo Jones's plans.

PAPERS TO BE READ AT THE INSTITUTE.

AS was stated by the President of the Royal Institute of Architects in his inaugural address, a Committee has been appointed by the Council for the procuring and selection of papers to be read at the ordinary general meetings of the session just commenced. The following papers have been promised, and will be read as under, subject to such alteration with regard to date as circumstances may require:—

Monday, Dec. 5.—"Considerations on the Selection of Building Sites." By Professor D. T. Ansted, Honorary Member.—"Memoir of the late Sig. Raffaelli Politi, of Girgenti." By Professor Donaldson.

Monday, Dec. 19.—"On the Construction of Theatres." By Mr. E. Salomons, Fellow.

Monday, Jan. 9, 1871.—"On S. Thomas's Hospital." By Mr. H. Currey, Fellow.

Monday, Jan. 23.—"On the Roof of St. Pancras Station." By Mr. W. H. Barlow, C.E., F.R.S.

Monday, Feb. 6.—"On the Mystery of the Tomb of Charlemagne, and the Researches made of late years to discover its actual Site in the Cathedral of Aix-la-Chapelle." By Professor Donaldson.

Further papers will be duly announced.

SEWAGE PURIFICATION.

DURING the past twelve months a series of experiments has been carried on at the Ealing Sewage Works to test the system there adopted for the purification of the sewage of Ealing. These experiments have been carried out by Mr. Jones, the local surveyor, under the superintendence of Professor Way, who after paying more than thirty visits has drawn up a most favourable report, which was published by the Local Board authorities on Saturday last. The sewage of Ealing is dealt with by means of filter beds, of which the Professor thus speaks:—"These filter beds are, in my opinion, of very great importance in carrying out any process of purification of the sewage previous to its discharge into the Thames. Without them it would be impossible, by the best precipitants known, to clarify the sewage in the tank, for no matter how perfect the system of precipitation may be, there is always some portion of flocculent matter which will not settle, and which can only be removed by filtration. These filter beds are an excellent feature of the Ealing Sewage Works." Speaking of the use of chemicals to precipitate the sewage, the Professor says:—"Several years since I expressed the opinion that if to the system of filtration that of previous precipitation were added, the Ealing works would be among the most perfect, if not the most perfect, of their kind in the country. I have seen nothing recently to alter that opinion. The precipitants employed are lime and a cheap salt of iron, the latter made on the premises by a process suggested by myself. With the lime is used a preparation of tar, but the chief effect in the clarification of the sewage is undeniably due to the lime and the iron salt. Slaked lime is mixed with water and the tar compound, the lime is kept in suspension in the water by air pumped into it by a small steam-engine, which is also used to pump water. The lime and tar compound are added to the sewage as it enters the works. It then passes to the tanks, where the greater part of the suspended matter is deposited. At the last of the sub-division of the tanks a solution of iron salt is allowed to flow into the sewage water, and advantage is taken of a slight fall to move a small water-wheel, which assists in the mixture of the iron salt with the water. The water then passes by upward filtration through two filter beds. It is not for a moment asserted that the effluent water at the Ealing works is pure, and the only question is whether it is rendered so far free from offensive matter as to allow of its discharge into the Thames. Since July, 1869, I have visited the works more than thirty times—two-thirds of such visits being during the past hot and dry summer. The state of the water has necessarily varied with the more or less complete success of the treatment employed during the experiments; but since the system has been in good working order I have considered the result to be very satisfactory. The effluent water, though not absolutely bright, has only a faint milkiness, which a more liberal use of chemicals would entirely remove. It is free from smell, and samples that have been kept for weeks have only in rare instances become offensive. I have no doubt a moderate amount of attention will insure a uniformly good result."

ARCHITECTS AND THE GOVERNMENT.

Royal Institute of British Architects.

AT a special general meeting (of Members only), held on Monday, the 31st ult., Mr. Thomas H. Wyatt, President, in the chair, attention was called to a correspondence which had recently passed between Mr. E. M. Barry, R.A., and the Office of Works, viz.:—(1.) A letter, dated August 22, 1870, from the Office of Works to Mr. E. M. Barry, stating that the First Commissioner of Her Majesty's Works had been advised by the law officers of the Crown that "the contract plans and elevations of the new Houses of Parliament, and all other papers necessary for affording a complete knowledge of the buildings," were the property of the Crown, and requesting Mr. Barry to deliver up such drawings and papers accordingly. (2.) A letter, dated October 20, 1870, from Mr. E. M. Barry to the Office of Works, complying with the above request so far as the drawings, &c., prepared by himself (for work since executed) were concerned, but urging that the drawings prepared by the late Sir Charles Barry were his (Mr. E. M. Barry's) inherited property, and requesting that he might be furnished with copies of "the case" submitted to the law officers of the Crown, and their opinion thereon. (3.) A letter, dated October 26, 1870, from the Office of Works to Mr. E. M. Barry, declining to furnish copies of the case or opinion, but suggesting that, if Mr. Barry were disposed to submit a "joint case" for the opinion of the law officers, and would consent to be bound thereby, the First Commissioner would instruct the solicitor of the office to act accordingly.

After some discussion, during which various letters were read and opinions were quoted in connection with the question at issue, it was resolved

"That this meeting adheres to the opinion entertained by a large proportion of the profession, and supported by a mass of evidence as to the practice in all parts of the kingdom on the question raised between Mr. E. M. Barry and the Office of Works, which opinion was embodied in a series of resolutions passed at the special general meeting held on May 9 last, maintaining the architect's right of ownership to his drawings, and promising Mr. Barry the support of the Institute. But, considering that the law officers of the Crown have, in a case submitted to them by the First Commissioner, expressed a contrary view as to the legal aspect of the question, and that the point, if disputed further, would have to be settled at law, the meeting feels that it cannot advise Mr. E. M. Barry personally to contest his right in a hostile manner. Feeling, therefore, that it would be undesirable for any individual architect to enter into a legal contest with the Government, and observing from the official correspondence now produced, that the First Commissioner is willing that a joint case should be submitted to the law officers of the Crown, and that he undertakes to abide by such decision if Mr. E. M. Barry will do so, this meeting would recommend Mr. Barry to agree to the principle of a reference as disposing of his case."

It was further resolved

"That, inasmuch as the case of Mr. E. M. Barry now under consideration has exceptional features, this meeting is not prepared to accept the decision concerning it which may be arrived at (by the reference above mentioned) as a rule for general guidance; but would prefer that, at the earliest possible opportunity, a legal decision on a case involving the question of an architect's right of ownership to his drawings, should be obtained in one of the superior courts, where evidence as to custom can be produced."

The attention of the meeting having then been called to a printed "Memorandum of the Terms of Appointment of Architects for Public Buildings, recently issued by the Government, it was, after same discussion, resolved

"That the document in question be referred to the Council, with a request that they will be pleased to give their due consideration to the conditions therein specified, and report to a future special general meeting (convened for the purpose) their opinion whether any, and what, action should be taken on the subject."

GLASGOW ARCHITECTURAL SOCIETY.

THE annual general meeeting was held on Monday night in the rooms of the Philosophical Society—Mr. Douglas, I.A., the president, in the chair. The rules of the society were revised to accord with the recently altered position of the society, it having become a section of the Philosophical Society of Glasgow. The following annual report was read and accepted, viz.:—"This society having become a section of the Philosophical Society, the Council specially drew attention to the library being now under the charge of the librarian of the Philosophical Society, and always accessible. The society's large collection of plaster casts and models are now lent to the Glasgow School of Art and Haldane Academy, and have a career of usefulness before them, to the mutual satisfaction of both societies. The delegates appointed to attend the Architectural Alliance in London were unfortunately unable either to go or to find substitutes on such short notice as they had received. The question of the proprietorship of architects' drawings was brought before the Council by the Council of the Royal Institute of British Architects, who were informed that it had been the invariable practice in this district to regard drawings as the property of the architect. The meetings of the society have been made the source of some very valuable information by the discussion on ornamental iron founding, commenced and illustrated by Mr. Thos. Russell; on the nature and properties of brick as relating to building purposes, illustrated by the results of a number of experiments, specially undertaken for the occasion by Mr. J. Macdonald and friends; and on the nature and properties of wood as a material of construction in buildings, commenced by Mr. Campbell Douglas; also by a paper on the sanitary aspect of architecture in Glasgow, by Mr. James Salmon. And the thanks of the society to those gentlemen for their valuable services have been recorded in the minutes. The revised laws have been submitted to the Council by the committee appointed for that purpose, and are now laid before the society for consideration. Altogether the Council have much pleasure in being able to report that during the past session the society appears to have laid the foundations of a yet more practical and useful existence than it has ever enjoyed." The treasurer's abstract of accounts, showing a balance of 110*l*., was read, and members elected as the Council of Management, viz.:—President—James Salmon, I.A., 141, West George-street. Vice-Presidents—Alex. Thomson, I.A., 183, West George-street; John Mossman, sculptor, 83, North Frederick-street. Hon. Secretary—Horatio K. Bromhead, I.A., 159, West George-street. Hon. Treasurer—James Howatt, measurer, 146, Buchanan-street. Councillors—Wm. Connell, plumber, 108, Argyle-street; Thomas Russell, iron-founder, 45, Washington-street; C. T. Bowie, painter, 26, Bothwell-street; Alex. Watt, architect, 67, Renfield-street; John Honeyman, jun. I.A., 61, West Regent-street; Wm. Clark, I.A., 37, West Nile-street; John Hay, ventilating engineer, 110, Bothwell-street; J. Macdonald, brickbuilder, Comley Park House; Angus Kennedy, I.A., 99, Bath-street; Campbell Douglas, I.A., late president, 266, S. Vincent-street; James Steel, modeller, late vice-president, 25, Holmhead-street. Thereafter Mr. Salmon, the newly-elected president, delivered the annual address.

◆

HEATING BUILDINGS BY HOT WATER.

THE proverbially fickle climate of the British Islands (says the *Mechanic's Magazine*) and the frequent recurrence of a damp and cold atmosphere, make the application of artificial heat to our dwellings and public buildings a positive necessity. Contrivances for producing an equable temperature within doors are consequently numerous, and in many instances they are of an ingenious character. Perhaps the best mode of accomplishing the desired end, as well as the simplest, is that of causing the circulation of hot water through iron pipes conveniently disposed for the purpose. Up to a very recent period, however, a considerable amount of hostile prejudice existed in regard to the use of hot water apparatus, and even now the plan of heating buildings by such agencies is not fully appreciated. Imagining that antipathy to the system arises in many cases from a lack of acquaintance with its peculiar merits, we shall endeavour to explain the principles which govern the action of hot water apparatus generally, and furnish some information as to their best form and proportions. In order to do this effectually, we must first glance at one or two of the natural laws which affect the circulation of fluids and gases. That all falling bodies gravitate with the same velocity and therefore descend through a certain definite space in a given time, is an effect of which gravity is the cause. It is from this cause that we obtain the unerring action of the pendulum. To the same source may be distinctly traced the phenomena attending the circulation of hot water through pipes, and this circulation, once created, forces all the water in the apparatus to pass successively through the boiler by which it is primarily heated. It is upon the continuous and uniform movement of the water along the pipes that the efficiency of the hot water apparatus immediately depends. Let us, then, inquire as to the power which insures this vitality, for without a clear perception of its nature there will ever be uncertainty as to the working of any apparatus of the kind in question. The force which produces circulation arises from the fact that the water in the descending pipe is heavier than that which is in the boiler, or, to put it differently, when heat is applied to the boiler a dilatation of the water within it ensues. The heated particles ascend through the colder ones, whilst the latter descend by reason of their greater specific gravity, and in turn become also heated. Expansion follows, and this species of action and reaction proceeds until all the particles are equally heated. It follows that the colder the water is in the descending pipe, relatively with that in the boiler, the more rapid will be its motion through the circulating pipes, and hence the diffusion of heat through their pores and into the atmosphere surrounding them.

Thus much of the general principles which control the action of hot water apparatus as applied to the heating of buildings, and now as to their particular dimensions and details. These will naturally have to be varied with the character and size of the buildings to be heated. For churches and large structures of a similar kind, and which have an ordinary number of doors and windows, it will be necessary in devising hot water apparatus to ascertain, first, the cubic contents of the auditorium. Having obtained this knowledge, let the number gained be divided by 200. The quotient will yield the length in feet of 4in. pipe required to maintain something like a steady temperature of 55°. For smaller apartments, as, for example, dwelling-houses, &c., the cubic measurement divided by 150 will furnish the proper length of 4in. pipe. These simple rules, which are the result of extensive practice and careful observation, may be safely relied upon, unless under very exceptional circumstances, and which, of course, would have to be duly considered by the constructor of an apparatus intended to meet them.

In reference to greenhouses, conservatories, and buildings of a like character, where the temperature should reach a mean of 60°, the sum of the cubic contents divided by 30 will give the length in feet of 4in. pipe required to produce the desired effect. Forcing houses, again, must have special calculations made for properly heating them. Nothing short of a uniform temperature of 70° to 75° will suffice for such places. In order to insure this the measurement, as before suggested, must be divided by 20, the quotient being the length of circulating pipe required. For gaining yet higher temperatures, lower divisors will have to be employed, and if smaller pipes be determined upon, the length must be proportionately increased. These are points of detail, however, which may be safely left to the skilled manufacturer who may be intrusted with the making of hot water apparatus for special purposes. Our own data may be taken as the base of calculations for economically and effectually heating buildings by means of hot water.

We are aware that some horticulturists have adopted the plan of heating their forcing houses to a much higher temperature than that indicated above, and of allowing a greater amount of ventilation than is usual. By aid of such arrangements, it is said, a finer fruitage is obtained, but there is no doubt that this course involves increased expense in the first cost of the heating apparatus, together with a large angmentation in the subsequent daily consumption of fuel for working it.

An important consideration to the horticulturist and floriculturist is the waste of heat through glass roofs and walls, It has been found, from a course of carefully-made experiments, that one square foot of glass will cool 1·279 cubic feet of air as many degrees per minute as the internal temperature of the house exceeds the external temperature. Thus, if the difference between the internal and the external temperature be 30°, 1·279 cubic feet of air will be cooled 30° by each square foot of glass in the building which is exposed also to the outer atmosphere. It will be admitted that this fact should be allowed its due weight in contriving hot water apparatuses for houses wholly or partly constructed of glass. Of course, in estimating the area of glass, due deductions must be made for the sash frames and wood-work by which the panes are surrounded. If the frames and sashes be made of metal, the radiation and consequent loss of heat through them will be equal in extent to that which results from the glass itself.

The quantity of air to be heated per minute, so far as conservatories and forcing houses are concerned, should not be less than 1¼ cubic feet for each square foot of glass which the building contains. When the quantity of heated air required has been thus ascertained, the length of pipe may be determined by the following formula, viz.:—Multiply 125 by the difference between the temperature at which the house is proposed to be kept (when at its maximum) and the temperature of the external air, and divide the product by the difference between the temperature of the pipes (200°) and the proposed temperature of the room. Then the quotient multiplied by the number of cubic feet of air to be heated per minute, and its product divided by 222, will give the number of feet of 4in. pipe to yield the desired effect.

◆

Extensive additions are to be made to the Aberdeen County Lunatic Asylum, at a cost of £2,850.

ON THE WATER SUPPLY OF THE TOWN OF PAISLEY, RENFREWSHIRE.*

IN the year 1835 parlimentary power was obtained to bring in water, for the supply of Paisley, from the districts of Gleniffer and Harelaw, lying to the south of the town, having respectively drainage areas of 624 acres and of 166 acres. The works were executed under the direction of the late Mr. R. Thom, M. Inst. C.E., who made careful experiments, extending over a period of three years, to ascertain the amount of water flowing from the Gleniffer district, by means of which the quantity actually available was found to be 70,354,769 cubic feet per annum, which was equivalent to 31·06in. out of a depth of 46·13in. of rain, over an area of 27,189,063 superficial feet. Of this quantity Mr. Thom awarded one-fourth as compensation to bleach fields.

The works consisted of a reservoir at Harelaw, capable of holding 14,248,000 cubic feet of water, with a conduit leading from thence to Stanely, where there were two reservoirs, one to act as a subsiding pond, the other for holding clear water, with regulating sluices for turning the water into either. The open conduit between Harelaw and Stanely was the principal feeder for the Stanely reservoirs; in its course it intercepted the burns flowing from Gleniffer braes, which was almost all pasture ground. The store reservoir was capable of holding 28,340,000 cubic feet, and the clear water basin 7,194,000 cubic feet. These works provided a supply of 22½ gallons per head for a population of 50,000. In 1855 the works were transferred from the Company to the Town Council, and the claims were settled by arbitration at 6⅜ per cent. on capital.

In 1853 new powers were obtained to bring in the water of the Rowbank burn, with a drainage area of 1,220 acres. These powers were however allowed to lapse, and another nearly similar Act was obtained in 1866, under which the present works had been constructed.

Gauges were erected on four streams, and two rain gauges were placed at different levels, to test the amount of water flowing off the drainage area in proportion to the rainfall. The quantity of rain falling on 700 acres, the depth being 64·39in., was equal to 163,614,990 cubic feet, and on 350 acres, the depth of rain being 50·79in., 64,528,695 cubic feet. The average depth of rain over the whole area was 59·86in., or 228,143,685 cubic feet, and subtracting the amount measured by the weirs, 179,662,325 cubic feet, there remained for loss by evaporation, &c., 48,481,360 cubic feet, which was equal to 12·72in. of the rainfall, leaving 51·67in. available for the high ground, and 38·70in. for the low ground. There now remained 170 acres with a rainfall of 38·07in. to be added, which yielded 23,492,997 cubic feet of water per annum, raising the total to 203,155,322 cubic feet per annum.

The pipes were constructed to carry 184 cubic feet per minute, and the compensation water was fixed by the Act of 1866 at 92 cubic feet per minute. Storage was provided for 180 days, or for about 77,000,000 cubic feet. A conduit 6¼ miles long conducted the water to the Stanely filters, whence it was conveyed to Paisley by a 16in. pipe. A branch pipe left the main 3 miles west of Paisley to supply the towns of Johnstone and Elderslie, and a set of filters and a tank were constructed at Craigenfeoch for filtering the water supplied to those places. Another set of filters and a tank were placed on the high ground to the south of the original reservoirs of Stanely, with a branch pipe leading down to them, to make up any deficiency that might occur in the old works.

The store reservoir erected to impound 77,000,000 cubic feet of water required three embankments, of which the largest was 60ft. deep and 500ft. in length along the top, with slopes of 3 to 1 on the inside, and of 2½ to 1 on the outside. The puddle wall was 8ft. broad at the top, and increased with a batter of 1 in 8 on each side down to the surface of the ground, from which point it diminished to one-half that width, the greatest depth being 62ft. The other two embankments were respectively 230ft. long and 14ft. deep, and 815ft. long and 18ft. deep. The first operation consisted in the formation of a bye-wash channel, to carry the water of the Reivoch burn during the construction of the large bank, as it was from this burn that floods were apprehended, and it now served for conveying impure water on their occurrence. When this was finished, the outlet tunnel was proceeded with, the purpose of which was in the first place to discharge the water which would have accumulated during the construction of the bank, and to receive the two outlet pipes, one of which carried the compensation water and the other the water for the town. The tunnel was 426ft. long, and the interior dimensions were 5ft. 6in. by 5ft. 6in. It had vertical side walls and a semi-circular roof. The whole length of the arch was 15in. thick, of moulded bricks set in cement, with an arch of rubble stone set in mortar over it. At the lower end of the tunnel there was a sluice-house, 10ft. square, with an arched roof, while at the inner end of the tunnel there was a horseshoe-shaped recess of masonry, in which was placed an iron upstand, or sluice shaft. This recess was 10ft. 9in. long by 5ft. 9in. broad, with walls 2ft. 6in. thick. The upper end of the tunnel, for a length of 17ft., was filled with solid masonry round the outlet pipes, and provision was made in the contract for filling the tunnel with clay round the outside of the pipes, but this had not been necessary. The waste weir was excavated in the solid rock at the south end of the large bank, and was 40ft. long, being at the rate of 1ft. in length for every 30 acres of drainage area.

---

* Paper read by **ALEXANDER LESLIE**, before the Institution of Civil Engineers.

It was originally intended to strip the entire surface of the inside of the reservoir, as vegetable matter was formerly considered objectionable, but the cost of this led the Commissioners to dispense with it.

The sluice upstand, in the horseshoe recess, was of cast-iron, 2ft. 6in. in diameter in the inside, and 35ft. high, the metal being ¾in. in thickness. It had four sluices at different levels, each being 17in. square, and fitted with double brass faces. The compensation water was discharged through a separate pipe, with an independent sluice, and the water for the town was conveyed into a cast-iron well, which was constructed with an overflow to take the pressure off the clay pipes, which led from it towards Paisley. The total length of the pipe track from the reservoir to Stanely was 11,126yds., of which part was of iron pipes, part of clay pipes, and part of masonry aqueducts, the pipes varying in diameter from 16in. to 21in. The trench was excavated 1ft. wider at the bottom than the exterior diameter of the pipe, and opposite each faucet there was a clear space of 6in. all round, to permit of the proper jointing of the pipes. The clay pipes were joined with rope-yarn and cement; while the iron pipes, which were for the most part turned and bored, were put together with thin cement. Where clay pipes were used in cuttings above 9ft. deep, a relieving arch of rough rubble was formed over them, which served thoroughly to protect them from crushing. Where the depth of the cutting exceeded 12ft., a masonry aqueduct was substituted for the clay pipes, the sectional area of which was 3ft. by 2ft.

The filters constructed at Craigenfeoch for Johnstone and Elderslie were two in number, each 45ft. by 32ft.. and the tank was 50ft. by 26ft. and 13ft. deep. The retaining walls were brought up with a void of 4in. in the heart, with two dovetailed recesses to form a tie opposite each other; 12in. by 6in. by 6in. deep, for every square yard of surface. These voids were filled with clean gravel in layers of 6in., and each layer was grouted with Portland cement. This formed an excellent watertight wall, the only objection being the cost, which amounted to between 40s. and 50s. a cubic yard. There were two semi-circular wells at the outlet of the filters, with sluices to regulate the head of water over the filters during filtration. The filters had each a 12in. clay pipe along the centre, with 4in. branch pipes open jointed. The filtering material consisted of 2ft. of coarse gravel, 6in. of small gravel, 6in. of slate chippings or shells, 6in. of coarse sand, and lastly 18in. of fine sand. The high level filters and tank erected at Stanely were of the following dimentions: three filter beds each 90ft. by 60ft., and a tank 138ft. by 38ft., and 14ft. deep, constructed on the same principle as the others.

The engineer for the works was Mr. James Leslie, M. Inst. C.E. The contractors for the reservoir at Nethertrees were Messrs. Alex. Wilson & Son, and the cost of it, inclusive of sluices and iron-work, was 17,433*l*. The same contractors executed the filters for Johnstone and Elderslie, and also the branch pipe from the main aqueduct, at a cost of 7,554*l*. Mr. John Pollock was the contractor for the pipe track from Rowbank to Stanely, which cost 15,414*l*., and for the Stanely filters which were not yet completed. Messrs. D. Y. Stewart & Co. cast all the iron pipes, and also laid that portion between Stanely and Paisley. The total cost of the scheme, including purchase of land, way leave, parliamentary and engineering expenses, amounted to 70,000*l*.

◆

ARCHÆOLOGICAL.

Antiquities of Ceylon.—An archæological committee has been appointed in Ceylon to investigate the ruined sacred cities and to collect inscriptions. Several ancient cities have been cleared of jungle, and many unknown antiquities have come to light. Photographs have been taken of the ruins of Anurádhapura, showing the places where the Mahinda meditated and preached; the Bo-tree, where Buddhaghosha recited his Visuddhimagga; and the Vihära, where he translated the commentary on the Buddhist scriptures. A telegram just received announces the discovery of new and very important ruins. The Governor of Ceylon, Sir Hercules Robinson, encourages the undertaking, and, to judge from the photographs already sent home, we may soon expect a work on the antiquities of Ceylon, which will prove a valuable contribution to the cause of oriental learning and historical research.

Archæology in Yorkshire.—The Rev. Canon Greenwell, of Durham, has just examined three small tumuli near Bridlington, which Mr. Greenwell says are the most important he has yet investigated. In a tumulus on Thwing Wold, 70ft. in diameter, but ploughed away until little but a slight rise remained, and which in a few years would, with many of the relics, have disappeared, Mr. Greenwell found a secondary burial of a man a little E. by N. of the centre, on the right side, head to the north, and doubled up. At the feet was a drinking cup. Another secondary doubled-up burial was found, a little W.N.W., the body being on the left side and head to E.S.E. At the centre of the tumulus was a grave in the rock, 7ft. in diameter and 4ft. deep. In the mid-grave, about 1ft. below old surface level, was a body on the left side; head E.S.E., right hand to the face, left hand on hip. On the wrist had been an armlet of wood or leather, but it was too decayed to make out. Midway of the right arm was a large jet button 1¾in. in diameter, very thin, with two holes uniting at the back. The face of the button is delicately engraved, in a cross encircled zaring. On the top of the button was a beautiful jet ring, also delicately engraved. In artistic exactness and finish they are equal to any modern production in jet. Singularly there was no undisturbed body at the bottom of the grave, but there were various human bones scattered widely. The whole grave, in fact, had been disturbed to put in the burial referred to above. Part of a drinking-cup, doubtless belonging to the first interment, was also found. In the grave there were also three barbed arrow points of great beauty, and in the materials forming the mound numerous split animal bones, fragments of different kinds of British pottery, flint flakes and scrapers, and other relics. The two other barrows have been wonderfully prolific in ornaments, burials and pottery, stone and flint implements, and bronze weapons, but the explorations there are yet incomplete.

Rome.—The discovery of a Mithric Temple below the ancient church of S. Clemente is one of the most important and interesting of the many services to Archæology the Prior of S. Clemente has rendered. The sanctuary is perfect; the altar, roof, and seats being all of hewn and massive stone, curiously faced with a species of stalactite, and giving a sombre and antique appearance which accords admirably with the fearful rites once enacted there. The form is oblong, and all round the interior, formed at the upper end like an apse, is a double row of massive stone projections or steps, out of the upper row of which six cavities of semi-circular form have been cut, the purpose of which is guessed to have been seats for the priests or initiated. An altar occupies the end, and above it is a niche for the idol, which the indefatigable care and research of Father Mullooly has brought to light, and being carefully restored piece by piece proves the special rite to which the temple was dedicated. A fragment of bas-relief previously discovered, representing a serpent coiling itself up a tree, and which is walled into the crypt, is probably part of the temple and will be restored to its first locality. Below the altar is a stone block, obviously intended, the *Tablet* thinks, for the slaughter of victims. The worship of Mithras was introduced after the conquest of Persia, and the extreme perfection of the preservation renders it one of the most interesting antiquities in Rome.

◆

BOOKS RECEIVED.

Messrs. Longmans & Co. have made arrangements for the publication of a series of text-books of science designed for general use in schools and for the self-instruction of working men. The first two volumes of the series, which is to be edited by Mr. T. M. Goodeve, M.A., have reached us. They are respectively—*Goodeve's Elements of Mechanism*, and *Metals, their Properties and Treatment*, by C. L. Bloxam. The first of these is well known, having already been separately published. Both are very good, and if succeeded by works of equal merit, the series will be worthy of the house by whom it is issued.—*The Elements of Practical Perspective* (Cassell, Petter, and Galpin) is the last issued volume of their technical series. It is by Mr. E. A. Davidson. If the publishers of this series are not careful they will be surpassed by the Messrs. Longmans, not so much with reference to the *matter* of their respective publications, but the *manner* in which they are turned out.—*Elementary Problems in Practical Plane Geometry* (Longmans, Green, and Co.), by John Lowres, is a graduated course designed chiefly for the use of students in science classes, and well suited to its purpose.—*Land and Houses* (Effingham Wilson), by John Parnell, contains a number of suggestions of value to investors in either of the desirable acquisitions which form its title.—*The Practical Solution of the Great Sewage Problem* (John B. Day), by William Justyne, is an exposition of the combination of the irrigating and precipitating processes in which, according to the author, is to be found the solution of the problem.—*A Digest of Facts Relating to the Treatment and Utilization of Sewage* (London: Macmillan and Co.), by W. H. Corfield, M.A., M.B., is the result of the meeting of the British Association Committee on the Treatment and Utilization of Sewage, the author, however, being solely responsible for the opinions advanced. The work deals exhaustively with the subject, and examines in detail the various schemes introduced up to the present time, concluding with a decided opinion, backed by most respectable evidence, in favour of irrigation.—*The Thirteenth Annual Report of the Board of Commissioners of the Central Park, New York* (New York: *Evening Post* Steam Presses), is a volume of some 200 pages recounting the improvements made in the park during 1869. The Americans certainly produce more interesting official reports than similar bodies in this country. The one now under notice contains a number of photographs and other illustrations really well done of the buildings, animals, and other objects of interest in the park.

◆

Building Intelligence.

CHURCHES AND CHAPELS.

Hargrave.—Hargrave Church, Northamptonshire, has just been reopened, after restoration, under the direction of Mr. W. Lewis Baker, architect, of Danes' Inn, Strand, who gave his services gratuitously. The tower and spire (which were in a dangerous state) have been taken down and rebuilt. A new vestry has been attached to the chancel, and the old south porch, which obscured a part of the church door, has been replaced with a new porch. The low roofs of the nave and chancel have been replaced with high-pitched roofs, the pitch being determined from the traces which existed on the east wall of tower of the weathering of the early nave roof. The old oak seats of the nave and north aisle have been carefully restored, and new ones constructed to replace those that had been destroyed to make room for pews. The old screen has been repaired, and the decorative painting restored under the direction of Mr. Butterfield, architect, and Mr. Brandon. The whole church has been newly floored and paved, partly with boarding, and partly with stone and tiles. The square modern east window has been replaced with a three-light Geometrical one of proper proportions, terminating in suitable tracery. The tower arch and long west lancet window have been opened out. Mr. Henson, of Finedon, was the general contractor, the lead work and painting and glazing being done by Mr. Downing, and the joiners' work by Mr. Knibbs and Mr. Coleman.

Nafferton.—Nafferton, in the East Riding of Yorkshire, has just had its parish church restored, at a cost of £600, under the direction of Mr. G. F. Jones, architect. The church contains a new organ, by Meacock & Son, and three stained windows—one by Wailes, of Newcastle, in memory of Mr. Richard Dickson, and the other two in memory of Mr. Jacob Laybourne.

Odiham.—South Warnborough Church, near Odiham, has just been reopened; after complete restoration. The works have been in progress for the last eighteen months, under the direction of Mr. Street, of London.

BUILDINGS.

Banff.—According to the *Inverness Courier*, Banff has improved very much of late, owing to the increased facilities afforded for feuing. It appears, from a speech of the Provost, at a meeting of the Town Council, that £20,000 worth of buildings have been erected in about eighteen months, and now that very eligible feus are to be had in the south of the town, it is expected that there will be a rapid extension in that direction.

Bristol.—One of those most useful institutiong, a *creche*, or infant nursery, where mothers may have their children taken care of while they are at work, was opened at Bristol, on Saturday week. The building has been erected from a design by Mr. Sedding, architect, of Bristol. On the upper floor are two rooms, one used as a day room, the other fitted up with cots.

Kelsale.—New school buildings have just been finished at Kelsale. The interior of an old building, formerly the workhouse, has been entirely re-modelled, at a cost of about £600. Mr. Norman Shaw, of London, was the architect, and Mr. T. Denny and Mr. W. Kerridge, the builders.

Wareham.—The new Town-hall and Corn Exchange at Wareham were opened on Tuesday week. The building is situated at the corner of North and East streets. A clock turret, boldly corbelled out at the angle formed by the two fronts, with moulded and enriched oak hood above the main cornice, supported on stone corbelled shafts, protects the two dial faces, and has an open framing for bell and a high and tapering roof, which forms a conspicuous and picturesque feature. Nearly the whole of the ground floor is occupied by a lofty and well-lighted Corn Exchange, with its entrance from North-street. A second entrance in East-street, opening into a spacious lobby, will give access, by a broad stone staircase, to the suite of rooms on the first floor, arranged as a Town-hall (occupying the east front), a magistrates' room, and a large and well-lighted reading room. The whole of the work has been successfully carried out by Messrs. Hobbs, Beer, & Best, of Wareham, from the designs and under the superintendence of Mr. G. R. Crickmay, architect, Weymouth, at a total cost of £1,830.

Wells.—The Episcopal Palace at Wells is now undergoing extensive restoration, under the direction of Mr. Benjamin Ferrey, F.R.I.B.A., the diocesan architect. The lower story, vaulted with a good Early English groined vault, heretofore used as a store and lumber room, is the portion of the building in which the principal renovations are being made. The walls are being cleansed, the stonework scraped and relieved of its coats of whitewash, dust, and dirt, the vaulted ceiling repaired, and the slender marble pillars repolished. This apartment will be used as a dining-hall, from which access will be had to the kitchen, through a vaulted ante-room at the north-west end. Mr. J. T. Irvine has the superintendence of the works, as well as the overlooking of the works now in progress at Bath Abbey Church and Wells Cathedral.

Westerdale, Yorkshire.—Owing to the requirements of the New Education Act, the present school is to be pulled down and rebuilt. The designs have been prepared by Mr. Henry Perkin, of Leeds, architect, and comprise a schoolroom, 27ft. 3in. long by 16ft. 3in. wide, for fifty children, with the necessary out-offices, &c. The building will be of stone, with bell turret of wood and slate, and the interior plastered, with open-timbered roof, &c.

Oxford Architectural and Historical Society.—On the 5th inst. the members of this society visited the Church of S. Peter in the East, Oxford, and, under the guidance of the vicar (the Rev. J. R. King), the fine crypt and other parts of the church were inspected. Ingram claims for this a higher antiquity than that of the Norman Conquest, but subsequent research would seem to fix the date at the commencement of the twelfth century. Above the crypt is a fine vaulted choir, the date of which would be a few years later. The present church consists of nave, north aisle, chancel, north transept, and a tower at the west end of the north aisle. The Norman church was apparently of the length of the present north aisle, as the zigzag Norman-moulded string-course, which forms the upper member of the capitals of the shafts in the choir, runs along the south wall of the nave for the distance. The south door is a fine specimen of the work of that period. Over the south porch is a chamber, which has for a very long period been known as the parish library, and it still contains books, accessible to the parishioners. The remainder of the church contains specimens of all the subsequent styles, but no especial features of interest.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

To Our Readers.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

Letters relating to advertisements and the ordinary business of the Paper should be addressed to the EDITOR, 31, TAVISTOCK STREET, COVENT GARDEN, W.C.

Advertisements for the current week must reach the office not later than 5 p.m on Thursday.

Received.—E. H. L., G. W., M. J. L., H. M., T. C. H., M. & Co., M. & H., W. G. P., J. N. C., Y., E. B.

W. P.—Consult back numbers for information on building concrete walls.

Justice.—Put your question in a definite form.

I. O.—The sketch to hand, but it will not appear.

E. O. B.—Sketch of Wymondham Church returned.

F. Geo. Green.—Send address and sketch will be returned.

C. T. Beck.—Sketch of panels returned.

Correspondence.

THE AIR AND HEALTH QUESTION.

(*To the Editor of the* Building News.)

Sir,—The question of "Aitch Ess" (2036, page 376), will doubtless be readily answered. Plenty of readers can cite the Acts of Parliament that have regulated how many cubic feet of air *shall* "be allowed to each person in a chapel and also in a schoolroom," that is to say, "the *least* amount" of space into which Government will allow you to pen a given number, and to have its lying testimony that you have then built "with a due regard to health."

Of course this has nothing to do with sanitary building, a matter which it ignores and involves in darkness. Health could nowise be affected by the difference of *much or little* house room or space in buildings, unless their structure prevents the natural change of air, and is simply noxious and murderous. As it is well known that we use up and poison about four cubic feet per head *per minute*, and that Nature takes care, out of doors, immediately to remove this from again touching us by its levity carrying it overhead, a "*due* regard to health" in any covered place solely means letting this process go on unhindered, or with as little hindrance as may be, and has nothing to do with the *capacity* of the space. The essentials, few or many, are summed up in this, that while it contains breathers, whether one or as many as it can hold, four cubic feet per breather per minute, and not merely *this number* of cubic feet, but *the right ones*, those particular cubic feet that they have once breathed shall immediately, without being diffused or re-breathed, find their way off (as they always do out of doors) and be replaced by fresh. A chamber so formed as to allow this to go on continuously is simply a rightly-built or innocuous chamber, whether it contains above 30,000 cubic feet per head (like a mediæval hospital ward figured by M. Viollet-le-Duc), or only 30 per head like the dormitory of a man-of-war. A chamber so made as to prevent this action, to mix up the breathed and unbreathed air, and force the former to be re-inhaled, little or much, is an insanitary —*i.e.*, a noxious and murderous structure—whether containing ten times or not a tenth of the legal space per head.

To order, then, that places shall, for health's sake, *contain* this or that amount of air per head, is to assume that this air stagnates, that its natural throughflow is prevented, or the structure shall always be a noxious and murderous one. It is of a piece with, but even more monstrously absurd than, the plans for "mechanical ventilation" of buildings, calling in steam power to them, as if they were mines or works of nature—features of the country, like rocks or rivers, given you to make what you can of, which after all, however, is truly the case—as when Sir C. Barry would have built round North Palace-yard, and left it afterwards to be decided to what purposes these wings should be applied. It is necessarily the case, if you will just think, where no person for ages has been paid one penny for designing buildings, that will be done which you pay men to do. If all that you give for building is a "percentage on the outlay," all that you pay for and can expect to have is "outlay." Everything in your building, *except the outlay*, must either be alms given you of pure charity or of blind chance.

But further, what right has any Government to ordain that necessary buildings shall have a capacity of *at least* so much? Certain of the governed have the means to build themselves a chapel or their children a school, of so many cubic feet per head, but not of twice that capacity. By what right does any ruler or Parliament on earth say "you shall beg or borrow the means to build larger or go without this building"? It is the most outrageous tyranny. *Method* or *quality* of building is what a government is bound to regulate, not its *quantity*. In the Mosaic Law we read (Deut. xxii. 8), "When thou buildest a house thou shalt make a battlement for thy roof, that thou bring not blood upon thine house, if any man fall from thence." Here is the simple root and principle of *all* ædile jurisprudence and legislation while this world lasts. It it simply to see that building is innoxious or unbloody. But neither Moses nor any ruler had a right to order "when thou buildest a house it shall be so many cubits long, or broad, or high, or thou shalt not build in this land at all."

Now if "Aitch Ess" or any building reader asks, Where is there an unbloody structure in this respect? where shall we see proof that buildings or chambers may be made to allow and nowise hinder the natural ventilation of every breather within them? I can tell him where. Unless he dwells in a village I can direct him how to find within a mile of him whole hundreds of variously sized and designed chambers, cheaply or expensively constructed, but all, without one exception, fulfilling this condition. Probably I shall not find *one*, made for *human habitation*, in his whole county that fulfils it. I do not know an unbloody one in modern England. Probably chance has not evolved a dozen, if any. But I can make it very plain to him why the others, above promised, are *all* rightly ventilated, without exception. E. L. G.

LUDGATE-HILL.

Sir,—This piece of jobbery (see letter in Building News last week), is, I believe, a question of price; £15,000, I am told, is demanded for the fee simple of this "small plot of land at the corner," a very large sum to throw away on a *questionable* improvement. I say questionable, because to many persons, the roadway just there seems quite wide enough at present: if any change at all be desirable, it may come at the N. side of Ludgate-hill, to open up a direct communication with Cheapside, north of the Cathedral.—I am, &c., A. H. Gent.

November, 18, 1870.

Intercommunication.

QUESTIONS.

[2038.] ROOFS.—In a slated roof how are the hips made watertight when no lead or fireclay ridge is used?—L. M.

[2039] REMOVING INK STAINS.—Can common writing ink be extracted from the leaves of a book without injuring the paper or letterpress; and if so, how?—L. M.

[2040] SCAFFOLDING FOR SPIRE.—How is the scaffolding for a lofty tower and spire constructed, and what is the best way to insure the stability and endurance of a stone spire?—L. M.

[2041] DRAWINGS.—Will some one tell me how to get a surface on drawings that have been washed out and altered, to prevent dust, &c., adhering to them?—R. W.

[2042] RAFTERS.—Will any of your correspondents favour me with the manner of calculating the sizes of rafters, ties, and struts for iron roofs that have to carry a certain weight, and the manner of estimating the value of same?—S.

[2043] FACTORY CHIMNEYS.—What is the usual construction, the extent of foundation, proportion between base and height, and the batter given to shaft? Are they not sometimes built in two rings of brickwork, and a space left between as manhole?—H. I. G.

[2044] CHANCEL WALL AND ARCH.—In a church, where the parishioners are responsible for the repair of the nave, and the rector for the repair of the chancel, which of them is under obligation to repair the wall separating nave and chancel and the chancel arch?—Epsilon.

[2045] CHURCH BUILDING.—Would it be unusual in a transept church to have two arches corresponding with the nave arches at the intersection of the transept with the nave, with opening over the centre of each arch, also corresponding with the clerestory windows; if it be unusual, what is the usual manner of finishing the intersection of the transept with the nave? A reply in following issue will oblige.—School of Art.

[2046] LODGE AND VILLA ARCHITECTURE.—Is there a book with this title by Mr. McKenzie, and if so who is the publisher?—T. M.

[2047] TAKING OUT QUANTITIES.—Would any of your readers kindly inform me through "Intercommunication" when the money for taking out quantities is due, and who is to be responsible when short ?—J. B., Gosport.

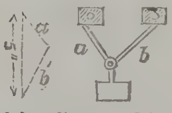
[2048] DESIGNS FOR HEAD STONES AND SLATES.—Where can I get them ?—G. E. M.

[2049] CONCRETE BUILDINGS. — Having carefully cast my eye on Mr. Tall's calculation of cost of concrete, it occurs to me that it is incorrect in one respect, which would of course affect the price of the work. He sets down 14 yards of broken material and 1 yard of cement, and calls this 15 yards of concrete; now my experience shows me that the cement being lost in the interstices of the broken material there can only be 14 yards of concrete, without allowance for waste. I should like to see some explanation of this matter.—PRACTICE.

[2050] LIGHTNING CONDUCTORS.—I have put up a large cross on the roof of a church which has a semicircular apse, and I am ordered to fix a lightning conductor to it. I want to know the best means for doing so, also for fixing the wire rope along the slating. An early reply will much oblige.—P. N. T.

REPLIES.

[2014] PULL ON TIE RODS.—"H. A. L." has made a mistake by applying a particular solution to a general case, but were the rods equally inclined from the vertical his reply is correct. Let "M. M." make a diagram with a vertical line, say 5in. long, to stand for the 5 tons weight, and from the ends of said 5in. line draw lines parallel to each tie rod, thus—



the length of each of these lines *a* and *b* gives the pull in tons on the respective ties.—B. A.

[2017] MOUNTING TRACINGS.—As nothing can be more vexatious than to have a good tracing spoiled in the mounting, perhaps it might be useful to some reader if I may be allowed to explain the method which for some time I have adopted, and which if properly done will ensure perfect success. Lay the paper on which the tracing is to be mounted on a drawing board, then with clean water and sponge damp it thoroughly till quite flat; then paste your tracing, lay it on the paper, and with a roller, commencing in the middle, roll towards the edges till perfectly even; leave on the board till dry, when it ought to be perfectly smooth. To mount on linen; soak the linen in water, then wring it out and strain tightly on a board with tin tacks about 2in. apart, and proceed as before. I find a very good plan for preserving working drawings and tracings on a building where are often exposed to the wet is, after being mounted, to give them a coat of size and then a thin coat of paper varnish.—H. C. C.

[2023] LIGHTNING CONDUCTORS.—The ratio of the conductivity of pure iron to pure copper, I was well aware, has been variously stated between eight and five times, and I took the latter, as the *minimum*, from the late Professor W. A. Miller's "Chemistry." The great difficulty of determining this ratio exactly arises plainly from the conductivity of copper being reduced (far more than any other quality) by traces of mixture barely or not to be detected in any other way. Hence I hinted, and maintain, that it is dangerous to trust a copper conductor, *unless specially tested*, less than about half the weight of an iron one. Conductors of insufficient capacity (even at a single inch of their length), are of course far worse than none. I have lived opposite a house, and seen it struck, and barely saved from being burnt down by copper bell-wire being fused and scattered in shots. As for a tall chimney, "without doubt protecting the houses around,"—as it appears from Sir W. S. Harris's report that without doubt a ship's *mainmast* conductor does *not* protect the ends of the main *yard* (to say nothing of other masts and bowsprit)—I must repeat, it is utterly a "vulgar error," that any single tall object protects others, however low or near. I never said *two* or *three* points protected no other, but plainly indicated, by the rule for finding all points needing conductors, that they do so. Let any number of summits form a straight line, horizontal or not, and the extreme ones alone can be struck. The rest are absolutely safe; and this my rule of the circular plane would show, for supposing the end ones raised a single inch, none of the others can be touched with the plane's centre. Again, if the triangle between three eminent points contains no point jutting beyond the plane that would touch them, these three (whether supplied with conductors or not) protect everything within their triangle. But there is no shadow of reason to expect any point outside it to be protected by them. Protection of any point by another—by *one* other—is, as I said, a delusion.—E. L. G.

[2037] FINE BUFF TINTED BRICKS. — Pressed bricks of this colour (or more approaching pale primrose) can be obtained from Beart's Patent Brick Company, King's Cross Goods Offices. The quality is first-class; they are made at Arlsey, Hertfordshire.—H. C. & S., Lewes.

◆

WATER SUPPLY AND SANITARY MATTERS.

TAIN.—We understand that the contracts for the Tain Waterworks were settled recently. The work has been divided into two portions, one being taken by Messrs. Ross & Mackenzie, Tain, and the other by Messrs. Macrae & Urquhart. We believe work is to be commenced immediately.

THE ROYAL COMMISSION ON POLLUTION OF RIVERS.—Major-General Sir William Denison, K.C.B., Dr. Edward Frankland, F.R.S., Mr. John Chalmers Morton, and Mr. S. J. Smith, secretary, having completed their inquiries and investigations into the river basins of Scotland polluted by town sewage and refuse from manufactories; also the basins of the Aire and Calder, Lower Avon, Windrush, and the upper parts of the Severn, river basins extensively polluted by woollen manufactures and the processes connected therewith; met recently at No. 1, Park Prospect, Westminster, for the purpose of considering their reports.

GREAT HARWOOD DRAINAGE AND WATER SUPPLY.—Since the formation of the Great Harwood Local Board in 1863, a complete system of drainage has been carried out throughout the town, under the superintendence of Mr. Brierley, C.E., of Blackburn. Main and other sewers have been carried up every street, and almost every house is now joined to the main sewer by small tributary sewers provided with proper traps constructed on the best principle. The streets have also been paved with "setts" and channelled, and the footpaths flagged. These improvements have all been effected with money borrowed under the Public Works Act, 1863. At the time the Board was formed the district had suffered much from the want of an efficient water supply. The Board at considerable expense has sunk a number of wells and put down pumps for a gratuitous supply, the water from many of which has been pronounced by Dr. Crace Calvert, the eminent chemist of Manchester, to be very wholesome. Since this the Accrington Gas and Water Company has constructed waterworks in the neighbourhood, from which many of the inhabitants are now being supplied.

◆

STATUES, MEMORIALS, ETC.

THE PRINCE CONSORT'S MEMORIAL IN HYDE PARK.—The large groups of sculpture are gradually being fixed in their places. Mr. M'Dowall's "Europe," at the south-west corner, is in progress. Mr. Foley's group will follow, then Mr. Theed's, and lastly Mr. John Bell's "America", which is now the least, but once, the most advanced. Mr. Foley is still at work on the figure of the Prince Consort, which cannot be completed for many months.

GLOUCESTER CATHEDRAL.—Six of the statues by Mr. Redfern, of London, have been placed on the south front of Gloucester Cathedral porch. The two central figures are those of SS. Peter and Paul; on the right are the Evangelists Matthew and Mark; on the left Luke and John. The statues of the four Doctors of the Church will be placed in other niches; large statues, one of King Osric, the other of Abbot Serlo, will be erected on either side of the porch; and ultimately a figure of our Lord will be placed over the inner entrance.

◆

LAND AND BUILDING SOCIETIES.

NEWHAVEN AND SEAFORD BUILDING SOCIETY.—The report of this society, presented at the annual meeting on Monday week last, states that the number of shares which have been in existence during the past year is 279½, of which number 75o have been withdaawn, 57 shares have been taken up during the year, and one borrower's share has been redeemed. The sum of £2,055 has been withdrawn by investing members, and after the usual dividend there remains the sum of £44 towards the contingent fund.

◆

LEGAL INTELLIGENCE.

FORMING A HANDRAIL. — At the Hastings County Court last week, the case of Saint v. Thomas was heard. The action was brought to recover £37 13s. 3d., for work done and materials supplied. A set-off of £21 13s. 2d. had been pleaded by defendant, but this claim was withdrawn, except as to £3 10s., which sum the plaintiff admitted to be due. It appeared that some joiners' work had been done at defendant's houses on a tender at £78. There was certain extra work, £5 3s. 3d., making a total of £83 3s. 3d., out of which plaintiff had received £45 10s., and it was now sought to recover the balance. On the part of the defendant the £5 3s. 3d. was admitted. From the evidence of the plaintiff it appeared that he had undertaken to do the work in question, and that defendant, after expressing himself perfectly satisfied with the work done, complained about the handrails, which he said were bad in workmanship, and he had employed a man to alter them. Mr. George Beck, an architect, was called for the plaintiff. He said the work, as executed by the plaintiff, was very well done, and there was no need for the alterations made by the defendant; even had they been necessary, however, the work could be done for £5, at the outside. James Snashall, a carpenter in the employment of the plaintiff, corroborated this evidence. On the part of the defendant it was contended that the handrail put up by the plaintiff was badly-shaped and improperly made, and that the alterations which were thus rendered necessary cost £12 13s. The defendant was called in support of this, as were also Mr. Walter Crisford, surveyor, and Mr. Warnham, the joiner who had made the alterations. James Barker, a joiner, said that the plaintiff's handrail was very defective, and that Warnham's charges were fair. The judge having summed up the evidence on both sides, the jury gave a verdict in favour of deducting £7 from plaintiff's claim. Judgment was accordingly given for £27 3s. 3d.

RAILWAY COMPANIES DIVERTING WATER.—The case of the Attorney-General v. the Great Eastern Railway Company was where the company was by its act restricted from obstructing the navigation of a river, or diverting any of the waters in it or which supplied it. It was held by the Master of the Rolls that this provision applied only to the construction of the line, and did not restrict any rights which the company might possess as riparian proprietor. It was also held that the right of a riparian proprietor is to take whatever water he requires for domestic purposes, and that the fact that the railway company did not require water for such purposes did not entitle them to take it for other purposes of a different character, such as for watering their engines.

REGISTERED DESIGNS.—The plaintiff in the case of Macrea v. Holdsworth registered as a design a pattern consisting of a combination of distinct designs. The defendant slightly altered the combination, but not so as to affect the general appearance of the pattern. It was held by the Lord Chancellor, on appeal from Sir W. M. James, when Vice Chancellor, that this was an infringement of the copyright in the pattern.

PENALTIES FOR DELAY.—JONES v. ST. JOHN'S Co LEGE, OXFORD. — This case, of considerable impor ance to contractors, was tried on Friday last, in the Cou of Queen's Bench, before Mr. Justice Lush and Mr. Justic Hannen. The action was brought by a builder to recover balance of £990 under a building contract with the Colleg They set up (except as to £120 paid into court) a cross clai of £870 for penalties, at the rate of £3 per day, under clause in the contract providing for delay in the completio of the works. The builder to this replied that the dela was occasioned by alterations ordered by the College, whic rendered it impossible, as they well knew, to complete th contract and the additional works within the specifie time, unless an extension of time was allowed. There wa the usual clause in the contract for referring disputes as time, or quantity, or quality to the engineer, who, hov ever had certified the amount due without any deductio for penalties, which did not appear to have been claimed and there was a provision for extension of time by hin but there had been no such extension. The plaintiff great relied upon the recent case of "Westwood v. the Secreta of State for India" (cited from 11, *Weekly Reporter*), d cided by this Court (Mr. Justice Mellor, Mr. Justice Wigh man, and Mr. Justice Crompton) in 1863, and where th Court as to set-off for penalties held that the contract was not liable, the Indian Government having by the own acts and orders knowingly rendered it impossible f the contractor to do the work within the time. On th other side, the express terms of the contract were relie on, and it was urged that, however hard and unjust might be, the builder had bound himself by it so strict that he could not resist the claim for penalties, and it w maintained that the case cited was not precisely applicabl though in the course of the discussion more than one the learned Judges seemed to think that it was so, but th it was wrongly decided; and in the course of the argumen the counsel for the College being asked by Mr. Justic Mellor whether, supposing they had given an order for e tensive alterations a day or two before the expiration the time, so that it was physically impossible the wor could be completed, and they had refused any extension time, they could have enforced the penalties—he admitte that he was bound to answer, according to this view, th they could not.—In reply, on the part of the plaintiff, was urged that as this contention was simply monstrous, was sufficient to show that the defence set up by th College was as contrary to law as it was to common sen and justice; and that the case of "Westwood v. the Secretary of State" was rightly decided, and embodied the soun and just principle of law, based on the acknowledge maxim of law that no one could take advantage of his ow wrong or enforce a penalty for a default caused by his ow act and conduct. The Court, at the conclusion of th argument, retired to consider their judgment, and on the return proceeded to give judgment in favour of the d fendents, the College. The plaintiff, the builder, they sai had expressly contracted to do not only the original but th additional works within the specified period, unless ther was an extension of time, which had not been allowed. was urged, they said, that this was hard on the contracto that he should be liable to penalties for works the natu of which he could not have known at the time he entere into the contract. If persons would bind themselves t absurdities or impossibilities, they must take the cons quences. No doubt these contracts were often very on sided, and one of the parties put himself absolutely in th power of the other. This was in reliance on the reaso ableness and fairness of the other side, but that could n affect the judgment of a court of law. The terms of th contract were clear, though its operation might be har and it did not appear that, in point of fact, in this case th extra works were out of the scope of the contract, had been ordered at such a time as to make their completio impossible. The case cited was distinguishable on th pleadings, as the point in question did not appear precisel to have arisen, though the Court had expressed the opinio mentioned. The judgment of the Court, therefore, mu be for the defendants.

◆

Our Office Table.

◆

BUILDERS' BENEVOLENT INSTITUTION.—ELECTIO OF PENSIONERS.—The thirty-fourth election o pensioners in connection with this charity too place yesterday (Thursday), at Willis's Rooms King-street, St. James's, Mr. Alfred J. Mansfield President, in the chair. As we stated in our report of the recent anniversary dinner, there wer then 44 pensioners in receipt of annuities from th Institution, 22 men and 22 women, the men re ceiving £24 and the women £20 per annum each To this number two pensioners were added b yesterday's election, one male and one female there being five male and seven females candidates The male candidates were :—William Peters Benjamin Johnson, Francis Sandon, William Gale and Mark Mintry. The female candidates were :— Harriet Proctor, Mary A. Morgan, Frances Seare Mary St. George, Jane Brothill, Elizabeth Treve than, and Alice Hugoe. The Chairman, after ex pressing regret that the funds of the Institutio at the present time would not permit of th election of more than two out of the twelve candi dates, declared the poll to be opened, and it re mained open from 12 o'clock till 3. At the clos of the poll, the scrutineers, Messrs. Stirling an Matthew Hall, announced that the successful candi dates were Benjamin Johnson and Mary Ann Morgan. It was also stated that the unusually larg number of 1,200 votes was left unpolled, the vote recorded being 800 less than at the last election A vote of thanks to the scrutineers (proposed b Mr. Thomas Smith, and seconded by Mr. Joh Thorn), and a similar compliment to the Chair man (proposed by Mr. George Plucknett, treasurer, and seconded by Mr. Joseph Bird) having been passed, the proceedings terminated.

Proposed New Road in South London.—We see it is proposed in a local journal to make a new road from the Obelisk, at the foot of Blackfriars and Waterloo roads, direct to Kennington Park-road, Brixton, and Clapham, coming out at Mansion-House-street, Kennington. It is suggested that the removal of the Blind-School, in S. George's Circus (which will probably take place in a year or two hence) will offer a favourable opportunity for the commencement of the work. We do not see the absolute need of such a road, especially as the existing route of London-road and Newington Butts is not much longer, and will be immensely improved before long by the removal of S. Mary's Church, and the widening of the last-named thoroughfare.

The Ashmolean Museum.—Mr. J. H. Parker, F.S.A., recently lectured before the Oxford Architectural and Historical Society on the history, the present state, and the future prospects of the Ashmolean Museum, as now proposed to be used for the assistance of the students of history and archæology. He said that he hoped to give new life to the Museum and the Society by combining them. The contents of the Museum, with the addition of the large collection of 2,000 historical photographs now being arranged in it, would afford an ample supply of subjects for study, and illustrations of them. The different members of the society could study them, each aking up and following out his own branch, and when he had mastered it, giving a lecture or paper upon it for the benefit of the other members who had not the same opportunity of studying it. The collection of objects of interest now in the museum, although not a large one, is well-selected, nd affords a great deal of information. The photographs supply what was wanting, and illustrate the istory of architecture, sculpture, and painting for he first thousand years of the Christian era, in a manner that could be done nowhere but in Rome.

The New Chairman of the Metropolitan Board of Works.—Colonel Hogg was elected hairman of the Metropolitan Board on Friday fternoon last. The votes given were as follows: —For Colonel Hogg, 44; Mr. Dalton, 15; Mr. Le Breton, 18; Mr. Runtz, 11; Mr. Savage, 16. The name of Mr. Runtz was struck out as being ast on the list. A second ballot was taken: for Colonel Hogg, 23; Mr. Dalton, 18; Mr. Le Breton, 20; Mr. Savage, 13. Mr. Savage was struck out. A third ballot took: for Colonel Hogg, 20; Mr. Dalton, 20; Mr. Le Breton, 14. Mr. Le Breton was struck out. Then for Colonel Hogg there were 20; for Mr. Dalton, 16. It was then proposed that Colonel Hogg should be chairman; 22 votes were recorded for him, against him none. On a division, there were for Colonel Hogg, 24; Mr. Dalton, 12. Colonel Hogg is therefore the new chairman of the Board. Lord Robert Montagu was nominated, but found no seconder.

Indian Antiquities.—General Cunningham, ate of the Bombay Engineers, has been appointed Surveyor-General of the Archæological Survey f India, with orders to proceed to India immediately and organise on an extended scale the perations for the preservation of Indian architecture, which have been already so successfully nitiated by the Government of India.

Building and Enlarging Churches and Chapels.—The usual monthly meetings of the ncorporated Society for Promoting the Enlargement, Building, and Repairing of Churches and Chapels were resumed on Monday at the society's ouse, 7, Whitehall, S.W., the Ven. Archdeacon ennings in the chair. Grants of money were made in aid of the following objects, viz.:—uilding new churches at Dudleston-heath, in he parish of Ellesmere, Salop; Fewcot, in the parish f Stoke Lyne, Oxon; Kenley, in the parish of oulsden, near Caterham, Surrey; Middleton Lawrence, near Darlington; and Skelsmergh, the parish of Kendal. Rebuilding the church Downham, near Brentwood. Enlarging or herwise increasing the accommodation in the hurches at Bere Ferris, South Devon; Bishop's chington, near Leamington; Corwen; Crowan, ear Camborne, Cornwall; Greywell, in the rish of Odiham, Hants; Llanishen, near Carff; Lugwardine, near Hereford; Pattishall, ear Towcester, Northants; Prittlewell, near uthend; Stretford, near Leominster; Swansmbe, near Dartford, Kent; Tolland, near ivelscombe, Somerset; and Warminster Christ Church, Wilts. Under urgent circumstances the grant formerly made towards building the church at Lynmouth, in the parish of Lynton, near Barnstaple, was increased. The society likewise accepted the trust of sums of money as repair funds for the churches at Low Marple S. Martin's, Cheshire; Rowledge S. James, in the parish of Binstead, Hants; and Thurstonland S. Thomas, near Huddersfield. The special fund for building school churches and mission houses being quite exhausted, and numerous urgent cases being still unrelieved, it was resolved at this meeting that fresh exertions should be immediately made towards resuscitating the fund, and a special sub-committee was appointed with a view to making its great importance known, and soliciting further subscriptions.

Triangular Drawing-Board.—Mr. George Fawcus, of North Shields, England, says *Nature*, has contrived an equilateral triangular drawing-board for isometrical drawing. An ordinary T square applied on the edges of an equilateral triangle draws tangents that meet each other at angles of 120°, and other lines drawn parallel to those radiating ones form with them angles of 60° and 120°, which are the exact angles of the apparent squares of isometrical cubes. The inventor believes that the use of this new drawing-board will make the teaching of isometrical drawing both simple and easy. The practice of isometrical drawing is strongly urged in the science and art drawing classes.

Institution of Surveyors.—At the ordinary general meeting, held on Monday, November 14, the following names were read and passed, to be be balloted for on December 12th, 1870, viz.:—As Members,—George Arnold, Colton, North Devon; Robert Blackadder, Dundee; Thomas Buchan, Dundee; Arthur Cates, 7a, Whitehall-yard; Jonas Paxton, Bicester. As Associate,—Frederick W. Cardell, 9, Whitehall-place. The following donations to the library were announced,—"Proceedings of the London and Middlesex Archæological Society," 2 vols., by the Council of that Society. J. B. Denton's pamphlet on "Village Sanitary Economy and Sewage Utilization," by the author. J. Hutchinson's "History of Dorsetshire," 2 vols., by E. Kermock. Dr. W. Farr's "Life Tables," by R. C. Driver. "Minutes and Proceedings of the Institution of Civil Engineers," 2 vols., session '69-70. by the Council of that Society. J. Corry's "History of the City of Bristol," 2 vols., by F. G. Eiloart. H Chamberlain's History of London," by F. G. Eiloart. W. Harrison's "History of London," by F. G. Eiloart. "Journal of the Royal Agricultural Society" (several parts), by W. Brown. G. Bradshaw's "Maps of Canals and Navigable Rivers in the Southern Counties," by S. W. Williams. C. Baily's "Remarks on Timber Houses," by the Author. The following donations to the library fund were announced,—G. P. Bidder, jun., £1 1s.; F. Wood, £2 2s.; W .Murton, £3 3s; G. Webb, £2 2s.; R. W. Clutton, £2 2s. A vote of thanks was unanimously given to the various donors. The president, Mr. Richard Hall, opened the session with an address. A vote of thanks was unanimously given to the president for his address.

Proposed Improvements.—The Commissioners of Works and Buildings have given notice of their intention to apply to Parliament in the ensuing Session for authority to acquire certain lands in the city, and to build a new Royal Mint. The lands and houses scheduled are in the precinct of Whitefriars and the parish of S. Bride, Fleet-street. The proposed new building will have a frontage on the Victoria Embankment at the western side of the City Gas Works, and will occupy a great portion of the space between those works and the Temple. The Commissioners, in the event of the passing of the Act, will be empowered to stop up, divert, alter or remove, temporarily or permanently, all wharves and landing places, and all ways, paths, streets, or passages connected with the scheduled land, and also to sell, lease, or otherwise dispose of the site and buildings in the Minories now forming the Royal Mint. By another Act they seek power to acquire additional property in the parish of S. Clement Danes for the purposes of the site of the Courts of Justice, and by a third to take land within the Liberty of the Rolls with a view to further improvements in connection with the Record-office, Fetter-lane. Plans of all these proposed works may be seen at the office of the Clerk of the Peace for Middlesex, at the Sessions-house, Clerkenwell; or at those of the Vestry Clerks in the respective parishes where the lands are situate.

Corporate Generosity.—The Corporation of Preston has just presented a gratuity of fifty guineas to the Borough Surveyor, in recognition of his services during the drought of 1868 in constructing the water-works at the Hodder.

The Blackpool Promenade.—The damage done by the late storms at South Shore has been measured, and the cost of putting the roads and sea-fence in the condition in which they were before the storm is calculated at £2,600, for which Mr. Carlisle, the contractor, is liable. Shortly after the damage was done, the Local Board served the contractor with a notice to put a sufficient staff of workmen on the damaged parts, so that the whole would have been put in order before the next high tide. The contractor not having complied with this notice, a meeting of the Local Board was held on Friday week, when it was unanimously agreed to take the works out of the hands of the contractor, and to charge him for the extra cost beyond the money held by the Local Board as security—viz., £1,850. On Wednesday week the Local Board put a large staff of workmen on the damaged parts of South Shore.

Lectures on Architecture at the Royal Academy.—It is announced that a course of lectures on Architecture will be delivered by Mr. G. G. Scott, R.A., Professor of Architecture at the Royal Academy, on the 16th of February, 2nd and 16th of March next. A few tickets of admission may be obtained at the rooms of the Royal Institute of British Architects, Conduit-street.

District Surveyorship Examination.—At a meeting of the Board of Examiners, held on Friday, the 28th of October, 1870, under the Metropolitan Building Act, 1855, Mr. Ebenezer Gregg, of 1a, S. Helen's-place, E.C., was recommended to the Council of the Institute of Architects for a certificate of competency to perform the duties of District Surveyor.

More Demolitions in the Strand.—Proposals have been made to remove another large portion of the Strand in connection with the projected new law courts, no signs of commencing which have yet appeared. The large block of buildings which the Commissioners propose to take is that which commences at Clement's Inn-gateway on the east, extending to Dane's Inn on the west. Northward the block is bounded by S. Clement's Inn Hall, and southward by the Strand. It contains, in addition to the hall, several large houses; amongst others Mr. Carr's hotel, Mr. Tuxford's printing office, the vestry-hall, and a long row of houses in Clement's Inn. It is not stated what is the precise object to which the new site is to be applied.

Death of an Edinburgh Builder.—We regret to record the death of Mr. Alexander Morrison, an eminent Edinburgh builder. Amongst Mr. Morrison's first works were the Skew Bridge over the water of Leith, at Warriston, about the year 1840, and the Haymarket Station of the Edinburgh and Glasgow Railway; since then he has executed many important works, both in building and engineering, not only in Edinburgh, but in all parts of Scotland, England, and Ireland. His last work, and which is still partly unfinished, is the Fettes College.

The Albert bridge, Cheslea.—An application was made to the Chelsea Vestry on Tuesday, on behalf of the Albert-bridge Company, for permission to pull down the Cadogan-pier, in Cheyne-walk, and place a temporary steamboat jetty at the bottom of Manor-street, during the construction of the Albert-bridge. It was decided to give every facility to the company.

MEETINGS FOR THE ENSUING WEEK.

Monday.—*Institution of Surveyors.* — "On Railway Rating." By Mr. Ryde. 8 p.m.
Society of Arts.—(Cantor Lectures.) "On Artists' Colours and Pigments." Lecture II. By F. S. Barff, Esq., M.A. 8 p.m.
Tuesday.—*Institution of Civil Engineers.*—"On the Theory and Details of Construction of Metal and Timber Arches." By M. Jules Gaudard, C.E., of Lausanne. 8 p.m.
Wednesday.—*Society of Arts.*—"On Peat, and its Profitable Utilisation." By Mr. Robert M. Alloway, M.A. 8 p.m.
Friday.—*Architectural Association.*—(1) Prize Essay. By the Author. (2) "On the Nineteenth Century." By Mr. J. W. Rhodes. 7.30 p.m.

Chips.

The foundation stone of a new Baptist Chapel at Goodwick, near Fishguard, was laid last week.

The corner stone of a new Wesleyan Chapel, to cost £2,000, and to accommodate 500 worshippers, was laid at Sutton, Lancashire, on Thursday week.

The foundation stone of a new Presbyterian Church was laid at Leven, N.B., on Thursday week.

Out of the £6,000 required for restoring S. Nicholas's steeple, Newcastle, Alderman Dodds has raised £4,000.

Barnard Castle Church will be reopened on the 5th proximo.

It has been resolved to erect a new Wesleyan chapel and schools at Burnley, at a cost of about £5,000, exclusive of land.

Mr. Howard Evans, assistant surveyor to the Salford Corporation, has been appointed borough surveyor to the corporation, of Barrow-in-Furness.

It is proposed to rebuild the parish church of Windlesham, Surrey, at a cost of about £6,000. Three sets of plans have been obtained from Mr. Smith, architect.

The United Methodist Free Church, Avenue-parade, Accrington, was reopened last week, after restoration and additions costing £500.

The new Wesleyan Chapel and Schools at Abersychan, Monmouthshire, in course of erection for the last twelve months, have been opened. The work was carried out by Mr. Jolliffe, builder, Pontypool, from designs, &c., of Mr. E. A. Lansdowne, architect, Bristol and Newport, Monmouthshire.

New schoolrooms in connection with the Congregational Chapel at Felstead have just been erected, at a cost of about £325.

It is proposed to erect a new railway station at Birkenhead.

Rochdale Parish Church is to be restored, at a cost of £2,000.

It is proposed in Ramsgate to purchase Townley Castle and grounds (now in the market) for the purpose of a people's park and recreation ground.

The church of S. Mary, Castlegate, York, was reopened recently, after restoration at a cost of £4,000.

The Bishop of Oxford recently consecrated a new chapel of ease at Headington.

The friends of Canon Freemantle are endeavouring, as a testimonial, to raise £2,000 for the restoration of East Claydon Church, of which he has been vicar thirty years.

The ancient cities of Ceylon are being explored, photographed, planned, and described by members of the archæological committee. A volume is to be produced worthy of the importance of the subject.

The Church of S. Michael, North Kensington, the foundation stone of which was recently laid, will be ready for consecration, it is hoped, by Easter Tuesday next.

The Parish Church of All Saints, Hastings, was reopened on All Saints' Day, after a complete renotion under the direction of Mr. Butterfield, the cost having been £5,000.

A schoolroom, which has been built in the Brighton-road, Redhill, Surrey, was opened last week. Mr. John R. Collet was the architect, and under his superintendence the work was carried out by Mr. James Hall, builder, of Sutton.

Mr. Louis W. Desanges, the painter of the Victoria Cross Gallery, has been elected a member of the Royal Academy of Fine Arts of Lisbon, in succession to the late Sir Charles L. Eastlake, P.R.A. Having obtained the Royal sanction and approval, the Academy have forwarded to the newly-elected member his diploma of academician.

The Council of the Iron and Steel Institute met at Leeds recently, and decided to recognise the services which the Duke of Devonshire has rendered as first president of the society by presenting a portrait of his grace to the Institute.

Timber Trade Review.

The following prices were obtained at Messrs. Simson & Mason's sale :—

Petersburg whitewood, at per Petg. std., 8l to 9l 15s; Quebec 1st bright yellow pine, 12ft 3 × 11, 19l to 19l 5s; 1st floated do., 16l; 1st dry floated do., 16l 15s to 17l; 3rd floated do., 9l; 1st dry floated, 9l to 9l 10s; Riga crown whitewood, 8l 5s to 8l 10s; Skonvick mixed yellow, 9l to 9l 10s; do. 3rd yellow, 8l 10s; Sundswall mixed yellow, 9l 5s to 9l 15s; 3rd yellow, 7l to 7l 10s; 4th yellow, 7l; 3rd white, 7l; 4th white, 6l 10s; Wifsta Wharf mixed yellow, 9l to 10l 10s; 3rd do., 7l 15s to 9l; Narva 2nd yellow, 8l 10s; Munksund 1st yellow, 9l 10s; Hernosand mixed yellow, 8l 15s; 3rd yellow, 8l 10s to 9l 15s; 4th yellow, 7l 10s; Gothenburg mixed yellow, 9l 10s to 9l 15s; 3rd yellow, 8l to 8l 5s; 4th yellow, 7l; Gefle mixed yellow, 8l 5s to 11l 5s; 3rd yellow, 9l 5s to 9l 10s; 4th yellow, 8l to 9l 10s; Christinestadt yellow, 6l 10s to 7l; Bollsta 3rd yellow, 9l.

Christiana 3rd white, at per 120 12ft., 2½ × 6½, 5l to 5l 15s; 2nd yellow, 6l to 6l 10s; 3rd yellow, 4l 5s to 5l 10s; Dram 3rd yellow, 5l 15s to 6l; 2nd yellow, 6l 10s; 3rd white 5l.

Miramichi spruce, at per 120 12ft. 3 × 9, 12l to 14l 5s; Saguenay 2nd spruce, 13l 15s. to 14l; Quebec 1st spruce, 15l; 2nd do., 14l. to 14l 5s; 3rd do., 13l to 13l 10s.

Quebec birch, at per load, 2l 10s to 2l 15s; oak, 6l to 6l 5s; elm, 4l 15s to 5l; hickory, 4l 10s to 6l; walnut, 2s 4d to 2s 9d per foot cube; Dantzig crown timber, 4l; common middling, 2l 12s to 3l; best middling, 3l 12s 6d to 3l 15s; Stettin oak, 4 17s 6d to 5l; Riga lathwood, 4l 10s to 4l 15s per cubic fathom; Petersburg do., 4l 10s to 5l 10s.

Riga logs, at per 18ft. cube, English crown, 4l 10s to 5l 5s; crown Dutch, 4l 5s.

The death is announced of Mr. John Bland, timber merchant, of Cardiff. The deceased was 65 years of age, and was well known throughout South Wales and the West of England.

LATEST PRICES OF MATERIALS USED IN CONSTRUCTION.

TIMBER.

Teak ....load	£12	10	13	10	Finland	£7	0	£8	0
Quebec, red pine	3	15	4	15	Memel...............	0	0	0	0
„ yellow pine..	4	0	4	10	Gothenburg, yellow	8	10	10	10
St. John N.B. yellow	0	0	0	0	„ white	8	0	8	10
Quebec Oak, white..	6	5	6	10	Gefle, yellow........	10	10	12	10
„ birch........	3	15	5	0	Soderham	8	10	12	0
„ elm	4	5	5	5	Christiania, per C., 12 ft. by 3 by 9 in.				
Dantzic oak	5	5	6	15					
„ fir	2	12	4	10	yellow	10	0	12	10
Memel fir	2	15	4	0	Flooring boards, per				
Riga..................	3	3	3	7	sq. of 1in., first yel	7	6	10	6
Swedish	2	7	2	18	First white.........	7	0	9	6
Masts, Quebec red pine	4	0	5	5	Second qualities	6	0	7	0
„ yellow pine..	4	0	5	5	PUMICE STONE pr ton	6	0	8	0
Lathwood, Dantzic, fm	3	0	5	0	OILS, &c.				
„ St. Petersburg	4	0	6	0	Seal, pale....per tun	35	10	0	0
Deals, pr C., 12 ft. by 3 by 9 in.,					Sperm body	79	0	79	10
					Cod	36	0	0	0
Quebec, white spruce	12	0	17	0	Whale, Sth. Sea, pale	36	0	0	0
St. John, white spruce	12	0	14	0	Olive, Gallipoli......	43	0	0	0
Yellow pine, per reduced C.					Cocoanut, Cochin, ton	43	10	0	0
					Palm, fine	39	0	39	10
Canada, 1st quality.	18	0	19	10	Linseed	30	5	30	10
2nd do......	12	15	13	10	Rapeseed, Eng. pale..	46	10	0	0
Archangel, yellow ..	11	10	12	10	Cottonseed..........	28	0	34	0
St. Petersburg, yel...	12	0	13	0					

METALS.

LEAD —

Pig, Foreign	per ton	£17	10	0	£17	15	0
„ English W.B.	do	19	15	0	20	0	0
„ Lead Co.	do	19	15	0	0	0	0
„ Other brands	do	18	0	0	18	5	0
Sheet Milled..................	do	19	0	0	20	0	0
Shot, Patent	do	21	0	0	0	0	0
Red or Minium	do	19	15	0	20	10	0
Litharge, W.B.	do	20	0	0	0	0	0
White Dry	do	27	0	0	0	0	0
„ ground in oil	do	0	0	0	0	0	0

COPPER :—

British—Cake and Ingot	per ton	£67	0	0	67	10	0
Best Selected	do	68	10	0	69	0	0
Sheet	do	71	0	0	73	0	0
Bottoms	do	75	0	0	0	0	0
Australian	do	68	10	0	71	10	0
Spanish Cake	do	0	0	0	0	0	0
Chili Bars, cash	do	63	0	0	64	0	0
„ Refined ingot..................	do	65	0	0	69	0	0
Yellow Metal	per lb	0	0	6½	0	0	6¾

IRON :—

Pig in Scotland, cash............	per ton	£2	9	0	0	0	0
Welsh Bar, in London	do	7	2	6	7	10	0
„ Wales............	do	6	10	0	6	12	6
Staffordshire..................	do	7	10	0	8	0	0
Rail, in Wales	do	6	5	0	6	10	0
Sheets, single in London..........	do	9	10	0	10	5	0
Hoops, first quality	do	8	10	0	9	5	0
Nail Rod	do	7	5	0	7	15	0
Swedish	do	9	10	0	9	15	0

Trade News.

TENDERS.

BRIGHTON.—The Sewers Board received 19 tenders for their new works, and accepted the tender of Mr. Matthew Jenning, of 3, Adelaide-place, London Bridge, for £66,962.

BRIGHTON.—For alterations and a new plate-glass front, &c., at the "Gloster Arms" Inn, Ship-street, Brighton. Mr. George Tuppen, architect :—

Garrett	£215
Bowles........................	210
Dean	198
Lockyer	195
Lancaster	170

BRIXTON.—For the erection of schools, Church-road. Mr. Joseph Gale, architect :—

Kirk	£3594
Downs	3493
Colls	3424
Gammon	3375
Little........................	3298
Browne & Robinson............	3282
Henshaw	3243
Rider........................	3208
Sewell........................	3177
King & Son	3130
Shepherd	2960

DRESDEN, NEAR LONGTON.—For erecting house, &c., for Mr. J. Harrison, Dresden, near Longton. Messrs. R. Scrivener & Son, architects :—

Inskip	£1060
Harvey & Co.	999
J. Heavey........................	995
Collis & Hudson (accepted)	840

BRIGHTON.—For the erection of a villa on the Clermont Estate, Brighton, for Mr. W. H. Hunt. Mr. George Tuppen, architect. Quantities supplied :

Patching & Son	£1170
Barnes	1147
Dancy	1096
Newnham	1089
Hall	1037
Lancaster........................	1035
Stenning	1026
Dean	1014
Cheeseman & Co.	990
Holloway & Son............	970
Lockyer	955
Miles (accepted)	850

CAMDEN-ROAD.—For the erection of an Athenæum, Camden-road. First contract for the hall. Mr. Frederick R. Meeson, architect. Quantities by Mr. French :—

Carter	£2490
Ingram	2391
Barber & Groome	2330
Webber........................	2169
Heath	2050
Newman & Mann	2035
Niblett & Son	1950
Goodman........................	1919
Sharpington & Cole............	1897
Mann	1893
Wright Bros. & Goodchild............	1875
Waterson & Co.	1865
Crockett	1790
Scrivener & White	1787
Till........................	1775
Langmead & Way	1730
Blease	1693
Parsons & Telling	1683
Gregory & Knight............	1677
Wood........................	1675
Gough & Lawton	1579

DEAL, KENT.—For drainage works. Mr. Edward W. Fry, surveyor. Quantities supplied :—

Neave	£1275
W. & G. Denne	1195
Woodcock........................	1147
Chamberlain	1145
Cottew	1133
Mathews	1121
Coleman (accepted)	1121

ENFIELD.—For new sewers for the Local Board :—

Pearson	£1999	0
Marshall	1480	0
Semell	1414	0
Haynes	1400	0
Riley	1363	0
Patman	1293	0
Anderson........................	1263	0
Standen	1250	0
Hayward........................	1199	0
Simson........................	1197	0
Carter	1180	10
Kelly	1180	0
Pizzey	1177	0
Hubberd........................	1139	0
Bayes	1110	0
Bugbird	1102	1

HANLEY.—For heating china manufactory by steam, for Mr. C. Ford, Hanley. Messrs. R. Scrivener & Son, architects :—

Boulton (accepted)	£272	10

LONDON.—For house and shop on the Marquis of Westminster's estate, Oxford-street, for Mr. T. B. Linscott. Messrs. Tolley & Dale, architects :—

Ennor	£4978
Brass........................	4932
Sewell	4882
Howard........................	4394
Conder	4293

LONDON.—For house and shop on the Marquis of Westminster's estate, Oxford-street, for Mr. William Thompson. Messrs. Tolley & Dale, architects :—

Brass	£3920
Ennor	3889
Sewell	3752
Conder	3686
Howard	3556

S. GEORGE'S-IN-THE-EAST. — For the construction of a brick sewer, 250ft. in length, in Anthony-street, and about 260ft. of 15in. pipe sewer in Upper Chapman-street, for the Vestry of the parish of S. George's-in-the-East, according to plans and specifications prepared by the surveyor :—

Harris	£498	10
Irons	469	0
Standen	440	0
Willowby	439	0
Ennor	418	0
Pearson........................	399	0
Maxwell	384	0
Hubbard	377	7
Potter	329	0

SURREY. — For schoolroom for parish of Chalden, Surrey. Mr. Richard Martin, architect :—

Jarrett	£218	0
Barnes	205	0
Ward........................	194	0
Francis........................	192	10

SUSSEX.—For alterations and repairs to Old Manor House, Butler's Green. Mr. L. H. Marcham, architect :—

Browne & Robinson	£1469	0	0
Conder........................	1360	0	6
Wells	1347	0	0
Little (accepted)............	1237	0	0

SWANSEA GUILDHALL.—In connection with the proposed alteration of the Guildhall, seven tenders were received. Mr. Phipps, the architect, estimated the cost of the work at about £2,800, or £2,900 :—

Morgan, Swansea	£3750
Williams, Swansea............	3507
Rees, Swansea............	3189
Watkins & Jenkins, Swansea..........	3110
Rees, Neath............	2945
White, Swansea	2750
Everall, Great Malvern (accepted)	2672

THE BUILDING NEWS.

LONDON, FRIDAY, DECEMBER 2, 1870.

INDIA AT SOUTH KENSINGTON.

INDIA is not largely represented in the courts and galleries of South Kensington. Indeed, the study of that country has never yet been made popular in England. It might have been thought that the terrible interest awakened by the Mutiny would have turned attention to the monuments, arts, and industrial manners of India; yet no: even at the Crystal Palace the Oriental collections are excessively meagre, illustrations of architecture being almost wholly absent, while the splendid Museum in Whitehall, which is a world in itself, attracts comparatively few visitors. But no region of the earth contains a more splendid accumulation, especially of architectural trophies, each type being perfectly unique, as may be judged from a number of magnificent photographs in radiating pillar cases. To some of these we would first direct attention. It must be remembered that there are three styles of Indian architecture; the vast, sombre, and ponderous style of the south—dark, towering, and suggestive of hateful mysteries; the beautiful grove-temples of the north and of Kashmir, —crowded with images, and encrusted with carving – built by the sun-worshippers of immemorial days who never hesitated to range a thousand superb columns round one of those forest fanes; and the works of those Mohammedan conquerors, "who designed like Titans and wrought like jewellers," and borrowed the art of Europe to aid them, but who erected more palaces and tombs than temples. The last are, perhaps, the most interesting as studies, though the two former may be more characteristic as looming, huge and grim, from the depths of forgotten history. And these noble relics of the past are sharing the fate of all ruins worth preserving. We can understand how in ancient times they were neglected, buried in the earth, flooded by water, overgrown by vegetation, burnt for lime, and left to moulder stone by stone; but we are astonished to have it upon official authority that the railway companies in India are allowed to convert some of its noblest structures into stations, to run lines through them, and even to utilise their masonry,—an example of barbarism worthy only of the Egyptians in their degenerate days, or of the Turks in Greece. Imagine making a quarry of an edifice, constructed in marvellous beauty in an age when Ellora, Ajunta, and Elephanta, were young, and still exhibiting, in certain points, an art and a knowledge of construction beyond which human science has not gone! It is sad enough to survey a scene of ruins, wrecks of great shrines, fragments of cornices, capitals, shafts, entablatures, and pilasters; but it is humiliating to know that the professed civilizers of a people are wilfully dilapidating the objects of its most legitimate pride, and suffering steam locomotives to shriek through its mausolea. No doubt these erections must for all the future be only regarded as pictures of former epochs, because although the Indian religions still flourish and command their millions of worshippers, the original uses of the temples are passing away. No more will be witnessed those awful rites that once were celebrated in the sculptured caverns of Rajpootana and Bengal, or the mysterious processions of Juggernaut, or the weird and hideous ceremonies to which were dedicated the mighty pyramidal-roofed shrines of the Kashmerian valley. Never again will a Taj Mahal be reared, a blaze of iridescent inlay, a stately pomp of marble for the sepulture of a favourite queen. Still, this is no reason why those works of wonder, inestimably valuable on account of the lessons they teach, should be allowed to rot, and even be assailed by ruthless vulgarity, when they are in reality almost the only objects in our Oriental dominion worth travelling so far to visit. Of course, we cannot expect that our architects will ever require to copy from the altars and walls of the Hindoo temples their monstrous figures of human bodies, double, triple, or quadruple, with the heads of lions, boars, and elephants, hawks and rats, and tails made of fishes and tortoises, besides those other more peculiar emblems which have never found a place in the European fancy. Nevertheless, those immense flat roofs, unsupported by a single pillar—those gigantic walls, jointed without mortar—those primeval arches, dating from a period long anterior to that in which the arch was known in Europe—those endless varieties of form, mounting tier upon tier in a yet symmetrical whole—suggest an amazing idea of the era when all else in the land was in harmony with them, opulent, barbaric, splendid; and the original worshippers were thronging in and out of those dreary fanes by day and by night. Moreover, like the colossal remains of ancient Egypt, they suggest a thousand questions, which, unfortunately, we can never hope to answer, with respect to the dynamical apparatus employed by the giants of those days. Indeed, we can surmise something concerning Egyptian mechanics from hieroglyphs and paintings, because they had a custom of illustrating their own lives and manners on walls and columns, on sarcophagi, and even on coffins. But the antique Indians of no class seem to have had the habit of thus describing themselves. They illustrated neither the conquests of their kings nor the manners of their households, but confined themselves to the images and incarnations of their mythology. There must have been a vast physical genius, or else an endless resource of manual labour, to drag those tremendous blocks of stone up the sides of the steep and lofty hills, on the summits of which the great temples—at any rate in the south—were generally placed. But no amount of mere manual labour could have reared them to their places and arranged them in artistic order, as the edifice rose higher and higher, and became more elaborate as it grew. We are not aware of any fragments of machinery, or any tools or articles of domestic use, belonging to the earliest period, or any representations of them, ever having been discovered in India. As for the Mohammedans, there is every reason to believe that those who followed the Mogul invaders established a system of arts and industry, utterly unlike that which had previously existed among them. And the cause is evident. They quitted a territory among the poorest in the world for one which was, then at least, the richest; they came from sands, and rocks, and pastures into a realm of antique magnificence, bright with riches, so that the monarch who had hitherto squatted in a tent speedily erected for himself a throne of beaten gold, under a vault of marble and mosaic, with a floor beneath him aflame with all the colours of all the costly stones then abundant in the East. His palace was of Babylonian dimensions and brilliance, and he could lavish millions upon his tomb. How different these jaspers, this sardonyx, and this opalline oriental onyx from that dark and age-worn specimen, brought by Sir Bartle Frere from the ruined city of Saitron, in Rajpootana!

We have divided the styles of Indian architecture into three types. In reality, however, of the smaller classes, they are far more numerous; but the broad distinctions are all that is essential, especially as tending to elucidate, as it must in some degree do, the position of the art in our own country. Indeed, it would be difficult to assign to any particular type such a temple as we find among the photographs at Kensington, as the hollowed rock, with a most elaborate and singular portico, from Behar, telling of a race of artists entirely original in their ideas and devoted to their work. Some writer has said that India is a great stone-book, in which every successive tribe holding possession of the land has written its annals and recorded its faith, which is true; and therefore those who visit the Museum with an intelligent purpose of study, may learn much more than of mere art. The Dravidian and Bengalee temples, for example, copied at Badamee, appear as distinctly to separate two epochs, and two provinces of the same territory, as a figure inthe calendar, or a boundary across a plain could do. They are among the gloomiest and most tomb-like structures ever reared, whereas the Mohammedan mausolea are not less brilliant than the Mohammedan palaces. We know, at once, that the builders of the first spoke one language, and the builders of the second another. A closer view, moreover, detects inscriptions that are additional pages in the stone-book, to which we have referred. From a thousand years before Christ to three hundred years after it, there are absolutely no chronicles except these, to tell as they daily do, of religion, arts, and manners. But, as relates to an investigation among these monuments as affecting our own art, nobody of authority has ever recommended that any Indian type should be copied in the West. We could no more worship in an Asoka temple than we could live in an Alhambra. Nevertheless there are principles to be drawn out of the whole that might very profitably be understood, and hence it is we would recommend, even to students not professional, a careful consideration of the architecture illustrated in the radiating pillar-cases. It will have its influence upon taste; it will widen the ideas; it will suggest how much more there is in the wonder-creating art than we are commonly apt to suppose. Once we only thought of Roman; then Corinthian and Doric were in fashion; after that came a revival—a very bad revival — of Gothic; and a long time subsequently Indian architecture was for the first time practically discovered. Those beautiful domes, the admirable arrangement of their supporting pillars, the subtle breaking-up of the external parts, so splendid in effect, the exquisite ornamentation, of which a better idea, of course, may be obtained at the India Museum than at either Kensington or the Crystal Palace, ought surely to attract any refined imagination. The gateway at Sanchee, for instance, may be pointed to as a work far more curious than the celebrated Ghiberti gates, and not inferior in execution. We are generally apt to think of Indian sculpture as necessarily grotesque. No mistake could be greater. In these antique carvings the figures of women are thoroughly graceful, and those of birds and animals strikingly natural, while the groupings are of extraordinary vivacity. The Permural Pagoda, at Madura, is a model of form and a treasure of sculpture. But, lingering once more for a few moments over the more florid productions of the Mohammedan epoch, they really do suggest direct lessons to our student. Firstly, in design and proportion, both usually perfect; the entire absence of monotony, both interior and external; the profuse and noble, yet harmonised and chastened use of colour; the abundance, delicacy, and variety of decoration, as exemplified in the Taj Mahal at Agra for instance, which is a blaze of beauty within and without, and which is constantly quoted to prove the boundless wealth and equally boundless ostentation of the Moguls. Why, it cost considerably less than our Houses of Parliament! The fretwork, and mosaic, and flowers in bas-relief of the "Mosque of Pearls," in the same city, is a greater proof of taste than of extravagance. But for sumptuousness the Tomb of the Emperor Akbar eclipses all. Those may gain a faint conception—an excessively faint one—who have admired the copy of the coloured Alhambra roof at Sydenham. Floor, walls, roof, in the Imperial sepulchral chamber seem as if built of gems, but at Kensington of course only an idea of the outlines can be had. And so with the other imperial sepulchres. We do not indicate them specially, because the object is rather to note the point of progress at which those artists reached than to describe their works. Nothing in Europe equals or even approaches them, though it is fair to remember that the Taj was designed by a Frenchman, the famous Austin de Bourdeaux. We suppose there is no colour conceivable which is not employed in the ornamentation of these structures—pale and deep green, bright yellow, every tone of gilding, blue in all shades, several browns and reds, purple, chocolate, pink, and all else—and this in frequent and the boldest contrast with masses of pure white, which must have been peculiarly difficult to manage. In the use of tiles, again, these palaces and palatial tombs of India exhibit the utmost art, while in the disposition of decorated colonnades and gateways an equal ingenuity was shown. In ornamental figures not purely conventional, the forms of plants and flowers were predominant. It must be reserved for another opportunity to glance at the humbler arts of the people for whom these vast and airy splendours were erected—their dress, jewels, art-manufactures, arms, fanciful work, means of conveyance, and domestic apparatus, which are amply illustrated at South Kensington. They represent the complement to the still and stately vista of Oriental architectural monuments, for which among the most opulent native princes the taste has entirely passed away. They build their palaces after the Doric and the Corinthian now, with central block and side wings. The history of architectural art in India came long ago to its close.

THE ENGINEER.

WHO and what is an engineer? Shakespeare thought it sport to have the engineer hoist with his own petard. When an accident happens upon a railway, involving damage to the engine, we are told by the gentlemen of the press that the engineer did not see the signals, or that he was buried under his engine. If a boiler explodes at a factory, the engineer probably weighted the safety-valve too much, or allowed the water to sink too low. If a gentlemen with money at his command takes a large contract for public works, he probably finds a suitable agent in a civil engineer, who thereupon becomes to the contractor "my engineer." So that it is not unlikely to be perplexing to the public to know who and what an engineer is.

When the Institution of Civil Engineers was founded, the members asked Mr. Thomas Tredgold for a suitable definition of the objects of the Institution, and he described it as "a society established for promoting the acquisition of that species of knowledge which constitutes the profession of a civil engineer, whereby the great sources of power in nature are converted, adapted, and applied for the use and convenience of man."

This latter definition is, of course, accepted as the orthodox definition; but the mere acquisition of knowledge, of any species, can hardly be said to constitute a profession. That which constitutes the profession is rather the practice of that knowledge; and if we ask what is the practice of an engineer, we shall find that it is the using of force to overcome the inertia of matter, and to move it.

To make a railway cutting a great deal of force has to be used. To make an engine requires the exercise of considerable force, and requires that that force shall be directed by a knowledge of the sources of power in nature. But to pick up a pin requires the exercise of some little force, if not of knowledge, and between the two extremes there are numberless cases in which knowledge, more or less, of the sources of power in nature is required and exercised; and thus we find that everybody is an engineer. Everybody exercising the force of his hands in a lawful manner, do he what he will, is an engineer. It would seem to be necessary, however, to limit the term to those who exercise force legitimately. We have opened the door rather wide; wider, a good deal, than those engineers who are engineers will like; but we must shut it in the face of the burglar and those who exercise force unlawfully. If we widen the basis of the structure, we will also take care that there shall be no improper materials in it. The engineer is constantly exercising a sacred task; he is directing by his will forces not his own in doing something that some motive impels him to do.

The upper stratum of the engineering profession will not like this democratic view of the subject. They know well enough who and what an engineer is; he is simply one of them. Well, to define a thing by the rule of thumb, perhaps that is sufficient. People ought to have an intuitive knowledge of who and what an engineer is. Amongst these gentlemen of the upper stratum there is a kind of intuitive perception of who is who, a brotherhood, as it were, by which they recognise each other, though, individually, strangers. But the public, whose demands must be satisfied, still cry Who and what, &c.

If we attempt a definition by saying that those who *direct* the forces in nature to the end desired are the engineers, and those who do the work merely workmen, we are still no nearer the truth, for the workman directs the forces of his own body in the same way, the difference between the work of the one and the other being not in kind but in degree only. If we say the man who directs or applies the forces in nature other than those of men is the engineer, we fail because we exclude those engineers who prefer to do their work by manual labour rather than by machinery. It will not do, therefore, to clip the question short by saying that those who have to do with engines are the engineers.

Let us make a suggestion towards an answer to the question. An engineer should be a man who, by the acquisition of so much knowledge of the sources of power in nature as will satisfy the requirements of a Board of Examiners (yet to be formed, unfortunately) that he is able to apply those forces to the benefit of society, puts in practice the knowledge he has attained in any way that suits him, let that be to drive an engine, to blow up a fort, to make a railway, or a steam-engine, or to do any other lawful work. But we at once leave out of consideration military engineers. There is a marked line of distinction between their position and that of all branches of civil engineering.

It is well known that many engineers—engineers of undoubted position from having had either a proper education, or from long practice—have long wished for some standard of qualification which would mark a difference between themselves and those unqualified persons who have the temerity to add C.E. to their names, without any sort of right to the distinction, and to these engineers a Board of Examiners would be welcome. The distinction of being a member of the Institution of Civil Engineers is rather an exclusive one, the rules not admitting of election except under circumstances which not all who are entitled can command. Besides, many engineers would like to see the style and title of "Civil Engineer" and of "Mechanical Engineer" merged into the simpler form of "Engineer," for the work strictly belonging to the civil engineer is now-a-days so blended with that belonging to the mechanical engineer and the shipbuilder that it is impossible, except in some branches—as water-works and other municipal engineering—to separate them.

Some such considerations as these must have influenced the Council of the Institution of Civil Engineers when in 1868 they issued a circular letter of inquiry at home and abroad bearing on the education and status of engineers, other than military engineers, with the view to an improvement of the status at home. The Council have just issued their report on the results of the inquiry, and it appears that our system of education for engineering pupils has some disadvantages, though it is admitted that it has also advantages that foreign pupils have not. The disadvantages are that our pupils enter on practice without a sufficient theoretical education in mathematics, mechanics, chemistry, geology, and other studies that ought to be gone through before the pupil enters the engineer's office at all; whereas many of our pupils enter offices without this knowledge, and have to pick it up as occasion offers, or as their individual industry may dictate them to acquire in any way they can, for as to personal attention by the master he has neither time nor inclination for it. The consequence is that few pupils ever do acquire a sufficient theoretical knowledge to carry them on successfully after they have commenced practice either on their own account or as assistants to others.

The foreign pupils learn their profession in a different manner. They attend lectures at scientific institutions, where they thoroughly acquire that theoretical knowledge so necessary for them, and, in a *dilettante* manner, learn to put it in practice; but they never, in fact, require really practical knowledge during their pupilage; and this is clearly a disadvantage to them—or, rather, it would be so to our pupils at home, where everything is done by individual enterprise, and where the State offers no employment to young engineers, who have to look out for themselves when they begin practice. Prudence seems to point to a modification of our own system by requiring a preliminary examination and certificate from all pupils wishing to enter engineers' offices, which should ensure that a certain amount of theoretical knowledge should be had, however acquired, so that the pupil may proceed at once to acquire practical knowledge and business habits. Then, when he is ready to begin practice, and has passed his final examination, there will be no further need of the inquiry—"Who and what is an engineer?" Engine-drivers, engine-men, millwrights, and others of that class will not acquire so much knowledge of the profession of an engineer as to satisfy the Board of Examiners, and will, therefore, not assume the name of "engineer," but will be satisfied with the name of their own proper calling.

THE INSTITUTE UPON ITS TRIAL.

IT is much to be regretted that every architectural student, as soon as he can wield his pen, every would-be reforming tyro, thinks he can gain *eclat* by caustic general criticisms upon the conduct of the Institute. Your correspondent, "Solomon Set-Square," has treated us lately to rather an overdose of such class of satire upon the sins of omission of the elder men of the profession. He finds the bane of modern practice to exist in what he terms "lump-contracts," and blames, of course, the Institute for not setting its face against them; but after wearily waiting for the morsel of bread which he promised us, at the beginning of his articles on the subject, should follow his too liberal allowance of sack, it was impossible to do otherwise than smile at the panacea he produced. Why! not the most powerful trade-union-like combination would succeed in convincing a single committee and hardly a single client to plunge recklessly, as he would propose, into bricks and mortar, without, I will not say counting, but at any rate without sufficient means of controlling the cost, dependent alone upon the mutual forbearence and a haphazard hope of unanimity on the part of the builder, the architect, and the surveyor, to meet throughout alike the views and the limited purse of the employer.

It is, however, in the pages of a contemporary that such useless criticism is most indulged in. The writer of sundry leading articles lately has first judiciously searched out the tender places of the officials at the Institute, and then jumped upon them, and now is kind enough to tell them that they ought to like such treatment because it is calculated to do them good. He first complains of want of liveliness on their part, and when asked what character of amusement he would wish them to provide for him and others like-minded with himself, all we can discover that he can suggest is that they should be prepared with some architectural news for him. Surely this is a strange need for the writer of leading articles in a professional review! We should have thought that, in his zeal for the good of the Institute, he might occasionally have dropped in to dispense there some of the information which it is more his proper business to accumulate. If we analyse other of his complaints, we find them equally groundless, as, for instance, the assertion that the meetings are less well attended than of yore. Firstly, we find the accusation not proven; and, secondly, if it had been, there would be no great reason for surprise, seeing that the system of publication of the "Transactions" directly after the meetings does, perhaps, tend to make members less careful to come and hear for themselves what they can so soon read at leisure. But the carping critic complains even as to the tardiness of this publication. He is indeed hard to please; but we can safely affirm that in this his accusation is disproven by the experience of every member, and we would ask him if any other society is able to publish their "Transactions" so well and so quickly as the Institute now does and has done for several years past. But the Institute has no students, or next to none, is the next ground for indictment. And why not? Because of the existence of that admirable younger body, the Architectural Association; and the Institute has wisely thought it better to hold out to it and the Architectural Art Classes the right hand of fellowship, and to constitute itself the examining *body*, to test the self-education which the junior members naturally prefer to any it is able to offer. But again, the Institute is taunted with not comprising a larger number of those who practice architecture in London and its provinces. This reminds us of Stephenson's famed rejoinder,—"Well so much the worse for the cow,"—and as the number of members has been nearly doubled during the present much-railed-at *regime*, and is continually on the increase, we may dismiss this alleged fault as one that will correct itself.

The expenditure of the funds, which has been grossly exaggerated (being only about £1,500 per annum), has been called in question. Now it cannot be contested that their administration has been so far financially successful that the income has been made to suffice for the wants of the Institute, and even to permit the addition of capital. The sneer that a portion is spent upon refreshments is absurd, seeing that they amount only to about £40, of which, I doubt not, the complainants consume quite their share. The *conversazione*, which the general body has repeatedly requested should be held annually, costs about £100. The rest of the expenditure will be found to be studiously economical, and to consist of salaries to the officials, who if melancholy, are, by reason of over-work not over-paid, although the amounts have been quadrupled under the present *regime*; of cash paid for prizes, medals, and to moderators and examiners; of the cost of printing and the Transactions, and absolutely necessary items. At any rate this count of this anonymous criticism may be safely dismissed, seeing that at each annual meeting the balance-sheet is always unanimously approved. J. P. S.

THE LIFE OF AN OCTOGENARIAN ARCHITECT.*

A LIFE of eighty years, devoted to zealous and unremitting study of architecture, assisted by constant intercourse with the best known and ablest of the architects of the time, could not fail of being fraught with incidents of interest to all members of the profession, and with much experience and information of value to the younger branches. It might naturally be feared that few, if any, who have attained to such an age, would then have the physical ability to impart to others the stores that had been laid up in their memory. Mr. George Ledwell Taylor, however, has just put on record, in the shape of an autobiography, his varied studies at home and abroad, made during sixty-five years, comprising among the subjects, the Cathedrals of England, France, and Italy, and the Temples of Rome, Greece, and Sicily; all which countries, he tells us, he has traversed, mostly on foot, having passed over no less than 7,400 miles in the course of his travels. An architect, more than most men, is accustomed to journey with his eyes open, and to note with pen and pencil the points which attract his attention in the buildings which he visits. We can thus follow him with ease and with pleasure as he describes places and things, more or less familiar, if not from personal observation, at any rate from our being conversant with them in books and illustrations.

Mr. Taylor has, in the first volume of his autobiography, taken this method of leading his reader with him by the hand, making his successive tours the pegs, as it were, on which to hang his discourse. He tells us that his life has been eventful, and yet, judiciously, we think, dwells little upon its events, and much upon what he has seen, and thought, and learnt about the works of the men who have lived before him. He speaks of it not having been his fate to apply his studies to any extent worth mentioning to practice in the higher walks of his profession, and to this fact probably we owe this effort to put on record the results of his lifelong labour. If, however, Mr. Taylor's practice has been merely, as he modestly describes it, a moderate one, he has left his mark in the literature of art, and as the joint author, with E. Cresy, of "The Architectural Antiquities of Rome," "The Mediæval Buildings of Pisa," and the "Revived Architecture of Italy," and as sole author of "The Stones of Etruria" and "Marbles of Ancient Rome," he has built up for himself a monument, probably not less enduring than those material ones have already proved themselves.

His professional career commenced in 1804, when he was articled, at the age of 15, to Mr. Parkinson, Mr. Cresy being his fellow pupil; and that youthful enthusiasm in those days was not excelled by that of our own, the following fact, which he narrates, may be confidently appealed to. They frequently rose at 3 o'clock in the morning, and walked from Guildford-street to Highgate, to take lessons in oil-painting, returning to breakfast, and thence to office at 9 o'clock! With all the energy of the present generation, we hardly think that many can boast of such early rising. Their first walking tour was in 1816, to the cathedral cities in the South of England, and the second in the same year to those in the north and east. The method adopted for comparing the several structures visited, shown by the sketches of the west fronts of York Cathedral, Beverley Minster, and that of the Parthenon, placed in juxtaposition, is useful and intelligent, and the drawings themselves are simple and practical ones, and far better than the mere pretty sketches which now too often are the sole results of young architectural students' tours.

Mr. Taylor says (p. 46), that his drawings were made from measurements on the spot, and that from early habit he got into the custom of measuring and drawing any building he fell in with. The greatest operation of the kind was that which he undertook with his friend Cresy, namely, the thorough measurement of that gigantic edifice, S. Peter's, a Rome, but curiously enough he adds tha the unpopularity of classic architecture caused them to abandon the publication of the plates they had prepared of that structure.

In 1817 the two friends commenced their grand tour on the Continent, and devoted themselves at first to a careful examination of the ancient Gothic cathedrals, churches, and other mediæval buildings in France. When they arrived at Rome, however, they became enchanted with the ancient buildings, and being convinced that they required to be better described, they resolved at once to measure accurately and draw the different temples, with the view of publishing them when they returned to England. This object they pursued diligently, having obtained permission to erect scaffoldings to each building and to excavate as they might find necessary in the pursuit of their researches. During the unhealthy season at Rome they proceeded to Naples, and thence frequently visited Pompeii, and obtained permission to make drawings. They also visited Pæstum, "with its magnificent though rough temples."

In the following year, 1818, they went through Greece from Bari to Corfu, through Albania and Thessaly, and to Athens, and through the Morea. Mr. Taylor's description of his travels through this wild and comparatively unknown but picturesque and beautiful region is most interesting. The account and the sketches which he gives of the cliffs upon which the Monastery of Meteora is perched may be taken as a good example. He says that in its neighbourhood there is a labyrinth of extraordinary rocky masses hurled about in most unnatural forms, many of them crowned by monasteries, which are approachable only by means of ladders, jointed and made to draw up. These are said to have been founded principally from 1300 to 1500 B.C., and are "finely calculated for religious seclusion." These rocks are a conglomerate of pebbles, some of serpentine, marble, granite, &c., firmly held together by an earthy cement, from which, however, they often project three parts of their substance. They stand up amidst and out of a comparative plain, which adds to their wonderful effect.

At Chæronea the travellers came upon some pieces of marble, which they suspected to be parts of the famous Theban Lion, mentioned by Pausanias as having been placed over the tomb of those heroes who fell there opposing Philip, 338 B.C. They investigated the spot, and digging around these fragments, were naturally pleased to find their anticipations realised. They found the head and a part of the right-hand leg of colossal size and boldly sculptured. A cast of this lion was afterwards put together by Mr. Newton, and is in the British Museum.

According to Mr. Taylor's drawing accompanying this description of its discovery, the lion is in a sitting position upon a rather high oblong pedestal. It is a specimen of the sculpture of the most perfect period of Greek art, and its discovery was an achievement to which the author looks back with no small but very pardonable pride. To the diary of the friends' sojourn at Athens, and of their labours in measuring and drawing the several Greek Temples, there and elsewhere, are appended numerous plans, which add considerably to the interest of the notes and descriptions in the text, and many particulars given in the latter will make this autobiography a useful book of reference on the subject, and endow it with more than a temporary purpose.

From Greece they returned to Rome, and thence homewards, stopping at Assisi, where they were agreeably surprised by the perfect state of the ancient temple at that place, the façade of which is in good preservation. Procuring ladders with some difficulty, they accomplished the measurement of it, and accordingly a plate of it is given as an illustration to the present work.

---

* "The Autobiography of an Octogenarian Architect being a Record of His Studies at Home and Abroad During Sixty-five Years." Vol. I. By GEORGE LEDWELL TAYLOR, Architect. London: Longmans & Co.

The following critical remarks on the Church of the Madonna degli Angeli at the same place, said to be the work of Vignola, will serve to show that Mr. Taylor was by no means given to indiscriminating admiration of the buildings he met with, but exercised a proper amount of judgment in choosing the subjects for his pencil.

" Some parts of the unfinished façade are bold in their masses, particularly the advancing parts of the extremities, but the proportions of the whole are bad. The interior is faulty. The Doric order is used, and is quite unmeaning in this situation. The manner of the breaking of the bed-moulds, while the corona runs straight through, is peculiar and odd."

To the two churches, one over the other, of the Convent of San Franceso, at Asvigri, with their paintings by Giotto and Cimabue, two elaborate and interesting plates are devoted, which, with the next in order, taken from the Arch of Trajan, at Ancona, show not only the catholicity of the taste of the author, but also in very satisfactory manner his power and method of delineation. Other places in North Italy were also visited on the route to England, and this grand tour of the friends was concluded in May, 1819.

This first volume is embellished with so many and diverse plates, that we give Mr. Taylor's reasons for their selection as follows :—

> The subjects met with in my travels are pretty fully explained by my rough sketches. I have placed the cathedrals which I have visited, and also the classic temples, in juxtaposition, and to the same scale, to enable my readers to judge of their respective dimensions and extent, and make their comparisons readily. Especially I have placed the west elevation of the Temple of Minerva, Parthenon, at Athens, to the same scale as that of York. The marble construction and elaborate finish of the ancient temples is certainly most beautiful, and so are those of the cathedrals in their way, but the magnitude and accommodation for worshippers in our cathedrals surpass the former to an immense degree. Having the plates of our work on Rome and Pisa, I have given some of them as illustrations of my narrative, and have resolved to add the copies I have of my works on "The Stones of Etruria," and "The Marbles of Rome ;" and I have given from our work on " Pisa," which is becoming scarce, several plates of the cathedral, the baptistry, and the leaning-tower.

The third chapter treats of professional experiences subsequent to this grand tour, when to a great extent the region of poetry was exchanged for that of ordinary prose ; the latter occasionally enlivened by some of the rubs which fate has in store for most of us. The publication of the materials so laboriously attained was the first to be attended with accident, and losses occurred through two fires and a bankruptcy sustained by the author's printers and publishers. Mr. Taylor, subsequently, was appointed surveyor of buildings to the Admiralty, an office which he held for many years, and he received a pension on vacating it.

The Melville Hospital, at Chatham, a plain but practical work, was erected from the designs, and under the superintendence of Mr. Taylor, and is the principal work referred to in this, the closing chapter of this first volume of the autobiography, of which we now take leave with but one word of caution to the author as regards the concluding one which is promised to us, namely, to remember that matters and things which may have been deeply interesting to himself when they occurred are less so to others at this distance of time, and with regard to any disputes in which the other actors, besides himself, are long since dead and buried, we would say of such, as he himself has remarked of sundry friends, "requiescat in pace."

The nave of Salisbury Cathedral is about to be lighted with gas.

ANCIENT IRISH ARCHITECTURE.*

ARDFERT CATHEDRAL, COUNTY KERRY.

THIS monograph of one of the Cathedrals of Ireland we warmly welcome, not only on account of the very great interest which the structure possesses, but also on account of the manner in which the work has been executed. We view the undertaking of such illustrative treatises upon our architectural remains with some little jealousy, because unless they be well done they had far better be left alone, inasmuch as they occupy the ground, albeit unworthily, and tend to warn off other and better would-be-labourers in the same field. We have, however, speaking with reserve, as being ourselves strangers to Ardfert, no complaint to find with the manner in which Mr. Hill has culled the fruit of a highly interesting locality, and his somewhat novel notion of associating with his own the labours of an able photographer, is a good one, which we should like to see followed in future similar attempts. Mr. Hill speaks with no exaggerative encomium when he remarks that the excellent photographs which accompany this work have been specially taken by Mr. Hudson of Killarney. "Ardfert," says Mr. Hill, " is situated a few miles to the north of Tralee, in the County of Kerry. Though now an insignificant village, in former times it was a place of considerable importance, having been the site of a monastery, founded by S. Brandon in the sixth century, and a bishop's see from even earlier times, for it is recorded, in the annals of Innisfallen, that A.D. 500, died Carpain, Bishop of Ardfert. There still remain, in addition to the Cathedral, the ruins of several small churches, and a large Franciscan Friary, while a round tower and other buildings are known to have existed formerly."

Of the Cathedral, unfortunately, owing to the ravages of fire and sword, nothing but the walls are now left. Very interesting walls, however, undoubtedly they are—a precious heirloom which it is to be hoped the present generation will hand down intact to future ones. Mr. Hill considers, the precise date of the Cathedral being involved in obscurity, that by comparison with the adjacent Franciscan Church, which is known to have been founded in the year 1253, the two buildings were nearly contemporary. The original structure was a simple rectangle, 137ft. long by only 25ft. wide, with a south-west aisle. Subsequently a large transept was built on the south side, with a divisional arcade of two arches between it and the nave, and a chantry and mortuary chapel, with a short aisle on the north side of the choir. To the same period as the erection of these late buildings and a defensive purpose, Mr. Hill attributes the heavy double embattlement that crowns the main walls. Access was contrived to this by means of stairs in the west gable. The western doorway and its flanking arcades—of which a good photograph is given, as well as the carefully-measured sketches and details in plates No. 7 and 8,—are stated by the author to be the only remaining fragments of an ancient Celtic building, that occupied previously the site of the present edifice. This evidently stands on its original foundations, since it is curiously far from the axis of the building to which it now forms the entrance. The style is a variety of late Norman Romanesque, with semicircular arches, enriched with bold zigzag mouldings, the most peculiar example of which, the inner member of the archivolt of the doorway, resembles, says Mr. Hill, in its treatment, the chancel arch of the interesting church of Kilmalkedar, near Dingle. Embedded in the north wall of the Cathedral is a remarkable piece of masonry, formed of very large blocks of limestone, filled up with smaller pieces of the same material. The doorway referred to being of a fine-grained sandstone, it is uncertain whether this portion of walling was anterior to it, but it evidently is so to the thirteenth century wall with which it is incorporated. The nave is almost devoid of windows, and the few it has are very small. The choir, however, has a noble range of nine lancet windows on the south side, and a fine triplet of the same in the east end, the outer opening of which is nearly 30ft. high. As Mr. Hill remarks, the effect of light in this portion of the building, being so much enhanced by the comparative darkness of the nave, must have been very fine.

We are sorry to learn that this portion of the church is in a dangerous condition, as its detail is very good. Like the contemporary work, not only in Ireland but also in Wales, though rigidly simple on the exterior, the interior design is comparatively rich, the several lancet openings widely splayed being combined by banded shafts supporting moulded arches, which form a continuous arcade, and in this instance are trefoil-shaped at the side and simply pointed at the end. A not very dissimilar range of side lancet windows is to be found at Christ's College, Brecon, and one at Grosmont in Monmouthshire ; and these several examples of the same simple but grand idea may be compared with advantage. As in the latter instance referred to, one of the side piers internally is wider than all the rest, and for no very obvious reason. The similar range of windows at Christ's College, Brecon, which was not many years since in an equally dangerous condition, and likewise propped up by modern buttresses, was taken down and rebuilt stone for stone under the directions of Mr. Seddon. We trust that this example may be treated in a like tender and successful manner.

The photograph which adorns the title-page of the work shows a curious figure from one of the niches of the east end, which was discovered some years since near to its present position. It is popularly called S. Brandon, and is in the act of blessing, and holds a crozier in the left hand. It is very ancient, and certainly older than the niche which contains it, and probably belonged to the church now represented by the Romanesque western portal.

We are glad to see that Mr. Hill has other monographs of Irish churches in hand, which we may with confidence expect to prove of not less interest and value than the present one.

ON THE HISTORICAL DEVELOPMENT OF ORNAMENTAL ART.

THE eighth lecture of his course on this subject was delivered by Dr. G. G. Zerffi on Tuesday afternoon last, in the Lecture Theatre of the South Kensington Museum. In commencing, the lecturer said that during a period in which many branches of the Aryan race were nomads in Central Asia, the Chinese had possessed written historical annals. They knew the globe to be flattened at the poles, recognised the truth of the Copernican system, and were aware of the fact that the magnetic needle pointed invariably to one of the poles (they had mistaken the north for the south). They were further acquainted with the melting and shaping of metals. They cultivated the mulberry tree, feeding silkworms with its leaves, and could weave silk with great skill. Their pottery showed an extraordinary development in ceramic art. They were also good engineers, having constructed many aqueducts and bridges. They could drain and irrigate their land, and had built huge walls for purposes of defence. Their five great emperors represented a corresponding number of periods of great moral and social progress. In looking back on the past, the Chinese perceived that a golden age had gone by, and admiring the past became a habit with them. Thus all development was checked, as man should look ever forward and not backward if he wished to advance. The Chinese had remained children in thought, though they were old in years. 4,500 years ago they had attained a high state of civilisation, and had since that time remained perfectly stationary. Their textile art presented us with patterns that could only excite the admiration of children. In ceramic art they excelled, as far as the substance or material was concerned, but often neglected the laws of ornamentation. It was difficult to say whether in ornamenting a vase they did not intend to dress a Chinese lady, or whether in dressing a lady in brocade they did not purpose decorating a teacup. On the dresses of ladies doves as big as bustards were found cooing, and on plates and vases flowers growing upside down and inside out were to be met with. The dress of a mandarin was often ornamented with a silken tree, which had fifty different kinds of foliage, sometimes with and sometimes without the roots. Everything, in fact, was done as it should not be. Their architecture was not much better. To understand the peculiar twist in their forms it was necessary to bear in mind that this nation was of Turanian race, and that the eyes of the Chinese were placed obliquely. Here and there comparatively modern motives might be traced in Chinese architecture. They, however, still remained in general faithful to the primitive principles of tent construction. Their towns resembled the large encampments of nomads. Architecture with the Chinese was as yet in no way an organic total; it was not even a chemically-united composition, but a mechanically-joined something, without any ruling and connecting idea. On the contrary, the only ruling idea that could be discovered appeared rather to express the separation and independence of the active elements. The walls were mere screens in brick, surrounded by framework to hang tapestry on, and did not support, but appeared to require securing against any weight. They looked as if movable, distinct from and independent of the roof. The scaffolding which supported the vertical as well as the horizontal enclosures belonged partly to textile, partly to tektonic art, and reminded one forcibly of the hedges of the New Zealander. The principle of coating the framework was borrowed from the tent. The divisions in the interiors of the houses were movable, consisting either of carpets, lattice-work, or jointed wooden leaves or boards. Chinese sculptured and painted ornaments bore the character of these divisions. The principal characteristics of their architecture were: imitation of woven stuffs, lacquered panels, and bamboo tress-work, with protruding knobs, used for fantastic and grotesque ornament. The lecturer next proceeded to enter into a detailed description of the enclosures, the tektonic frames, and the substructures of Chinese houses. Passing on to the subject of embroidery, he said that the embroidery of the Chinese was extremely old, being mentioned in records dating as far back as 2205 B.C. The stuffs were described as being of one colour only, the silk being either white, red, or black. Weaving in colours was not then known to them. The frequent mention made of birds' feathers, however, proved that these were used in embroidery. The oldest Chinese embroidery in colours was perfectly plastic, forming a kind of polychromatic relief on the flat surface of the stuff. This style still prevailed, only, instead of feathers, artificially-coloured threads were used. Specimens of this kind of work reminded one forcibly of the sculptured slabs of Nineveh. It was to be remarked that though the Chinese employed reliefs in carving, pottery, and metal work, they hardly ever used stucco reliefs in ornamenting their buildings. In Mexico, as in India, stucco became transformed into sculpture. The absence of stucco was one of the chief characteristics of Chinese architecture, in which the void predominated. Chinese walls might be considered under four heads: 1, as surrounding courtyards; 2, as isolated protecting walls at the entrances of houses; 3, as substructures; and 4, as enclosures or partitions in dwellings. These four descriptions of wall were all constructed of air-dried, baked, or glazed tiles and bricks. Glazed tiles and bricks were only used for temples or imperial buildings. The use of materials in buildings was regulated by law. The protecting walls had large protruding plinths, and resembled our fire-screens. They differed in colour and ornamentation according to the rank of the occupier of the house. The outer walls were generally white, decorated with landscapes or other ornament. The inner walls were red, richly ornamented with gold. These had also a kind of frieze, on which trellis-work was painted, thus apparently detaching them from the roof. In the habitations of the higher classes, the walls were decorated with damask; in those of the poorer people paper-hangings were used. This species of wall decoration we owed to the Chinese. The doors, windows, and other openings were of every shape. When doors were used they were generally of precious wood, elegantly ornamented, or altogether of pierced work. The walls and columns were connected in three different ways, viz: (1), the wall was outside the columns, these being, in fact, the only real support of the roof; (2), the wall was drawn between a row of outer and inner columns, a form with which we met in the pseudo-peripteros of the Greeks; and (3) the wall was erected behind the columns. This last arrangement was chiefly found in kiosks and small pavilions. The roofs of the houses were exact representations of the textile cover, being ornamented in various patterns, conveying the idea of a tent-roof borne by poles. Pile architecture was much cultivated by the Chinese, a large portion of the population living entirely in pile dwellings and boats. Sculpture was not practised by these people, though their metallo-teknic was highly developed. They had no painting, being without a sense of symmetry and perspective, and despising shading altogether. Everything with them assumed more or less the nature of caricature. This was nowhere seen more clearly than in their pottery. Nature had supplied the Chinese with kaolin—*i.e.*, a decomposed feldspathic granite—and thus furnished them with the best material for the manufacture of porcelain. A description of the forms, patterns, and ornamentations of Chinese pottery concluded the lecture, which was illustrated both with photographs and some splendid specimens of Chinese vases from the rich collection belonging to the Museum.

---

* "Ancient Irish Architecture. Ardfert Cathedral, County Kerry." Drawn and Lithographed by ARTHUR HILL, B.E., A.R.I.B.A. Cork, 1870.

UNHEALTHY FOUNDATIONS.

DR. STALLARD has been reporting in the *Lancet* on the causes of recent unhealthiness in Liverpool. His conclusions have been of course disputed by Dr. Trench, another member of his own profession, and medical officer of health to the borough, and the matter came on for consideration last week before the Health Committee. We do not propose to decide, or even to consider, the differences between the doctors, but simply to glance at a statement advanced by Dr. Trench, the truth of which appears about to be tested in the best possible way.

Dr. Stallard, in his report, speaking of a place called Tunnel-lane, says:—" The Corporation are filling-in the brick-pits with refuse, consisting of ashes, fishbones, lobster-shells, cabbage-leaves, potato parings, old door-mats, broken pottery, and the thousand other perishable articles which the sewers will not remove. No houses can be healthy that are built on such a subsoil, and no sewers can be kept free from noxious gases under such untoward circumstances."

Dr. Trench entirely controverts this view of the subject. He says:—" As a physician and chemist, I assert that all organic materials—fishbones, lobster-shells, old mats, and other perishable articles—will, if left undisturbed in the heap of ashes and macadam detritus, be speedily destroyed by eremacausis without the evolution of any notable noxious gases, and that long before houses are built on the spot it will be a firm yet porous foundation, better suited for health than our boulder clay."

The Liverpool Health Committee, feeling doubtless incompetent to settle the matter in the face of two such opposite opinions, are about to request Professor Huxley to select two scientific men to inquire into the matter.

"KELLY'S POST-OFFICE ENGINEERS', IRON, AND METAL TRADES' DIRECTORY."

THIS directory forms a capital office-companion to the "Architects' and Builders' Directory," which we noticed some weeks back. It differs for the better from London and County Directories hitherto published, inasmuch as a more thorough division of trades is given than is possible in a general directory. Another very good feature is the introduction of the trade-marks by which the various firms distinguish their specialities. Messrs. Kelly & Co. have used, greatly to the advantage of engineers and the trades connected with them, their well-earned monopoly of directory making, and the least our readers can do in return is to apprise them of any mistakes, and to render any information in their power that may contribute to make still more perfect and useful successive editions of this—the first attempt at a work of its kind.

DRYING OF WOOD.

THE following is substantially the subject-matter of a lecture before the meeting of the Polytechnic Society of Munich in reply to the query, What means are applied at Munich for the proper drying of wood required for architectural, joiner's, and other purposes? The author enters, first, into a series of particulars relating to the very varying quantity of water (moisture and juices) contained in various kinds of wood at different periods of the year, from which it appears that, according to Dr. Hartig's experiments, woods (trees) generally contain, during the winter months, about an average of 50·7 per cent. of moisture; in March and April, about 46·9 per cent.; in May, June, and July, about 48 per cent.; while up to the end of November the quantity of moisture increases but little. Air-dried wood (timber) contains from 20 to 25 per cent. of water, and never less than 10 per cent. Wood which, by being artificially dried, has been deprived of all moisture, is thereby entirely altered as regards its cohesive strength—it becomes brittle, loses its elasticity and flexibility. In order to dry all kinds of timber by artificial means, so as to preserve the essential physical structure, and, thereby, the good properties of the wood, the drying should be effected slowly, and the temperature to which the timber is submitted should be moderate to begin with, and care should be taken not to eliminate all the water. The author enters into details, illustrated by engravings, on the best means of drying timber on the large scale, and states that small pieces of wood, such as are intended for joiners and furniture-makers, may be readily and efficiently dried by being placed in dry sand, and then heated to 100°. The sand acts in the manner of an absorber of the moisture, as well as a diffuser of the heat.

THE IMPROVED INDUSTRIAL DWELLINGS COMPANY.

IN an article on the useful work so successfully accomplished by this company, the *Examiner*, after describing the buildings recently opened at Pimlico, says:—" With the completion of the buildings now in course of erection at Bethnal Green, the Improved Industrial Dwellings Company will have exhausted its present capital of nearly a quarter of a million sterling in the construction of twelve edifices, containing accommodation for one thousand families. And with a growing population, with wealth and trade, and public improvement hustling the industrial classes into cheap apartments, only to be found in narrow streets, decayed houses, and with inefficient sanitary arrangements, we ask is a movement which has proved itself so eminently successful to stop here? We hope not. We are not unmindful of the work of similar associations as well as of private benevolence. For each and all there is need, and we wish them all Godspeed; but the particular recommendation of Sir Sydney Waterlow's company is that it has been organised and conducted as a matter of business, and that, though its objects have been benevolent, its means and operations have had no connection with public or private charity. Speculators, financiers, and men of capital, who are eager to invest in a foreign loan, a new railway, a mine, or any hazardous joint-stock undertaking, it is worth your while to find the funds for continuing the work of companies like this one. The shares may not be quoted in the official list, they may not sell at 3 to 5 premium, and Capel Court may not esteem them highly; but they will pay you a steady 5 per cent., and your magnificent ventures do not always do that. Besides the direct return in hard cash, they will do more: they will clear away the coverts of vice and disease which flourish in our midst; they will provide dwellings fit for honest labour in a Christian land; thereby they will aid the education it has been decided the meanest citizen shall in future receive, and thus we may look forward to a time when London shall contain an industrial population alike healthy, happy, and honest."

A LARGE CAISSON.—The huge caisson designed for the east abutment of the Illinois and St. Louis Railway Bridge, St. Louis, was launched at South St. Louis on November 3rd, and was put in position opposite the city the next day. Its extreme dimensions are 84ft. by 79ft., and it is now 23ft. high. It contains 680,000ft. of lumber, weighing 1,500 tons, and 300 tons of iron.

EDUCATION BOARDS.

A STEP has been gained in favour of the universal education of the people. After years of effort and agitation, Parliament last year passed an act which is now about to be brought into operation. The ratepayers in many parts of the country, during the past week, have elected school boards; and as in all general elections, the results are somewhat surprising, and more particularly so as far as the metropolis is concerned. In the first place, every lady candidate has been returned, Miss Burdett Coutts's vaticinations notwithstanding. This we regard as a real triumph. Working men candidates have, in almost every instance, been defeated, for two all-sufficient reasons. In the first place, the workmen were, as usual, divided, and consequently distributed their voting power amongst too many candidates; and secondly, they had little or no money to spend, and money is an all-powerful element in an election. In some of the metropolitan constituencies, some of the candidates have expended a large amount of money, with the intention of not only being returned, but with the hope of being elected to the post of chairman, with its pay of £1,500 a year. This applies to more than one M.P. candidate who has been returned. Now the Board is elected, we have not much fear of its going far wrong, as the public opinion which demanded that the Act should be passed will be equally exacting in its being well administered.

◆

ALTAR OF ROMAN CATHOLIC CHURCH OF S. MARY, NEW YORK.

ONE of our illustrations represents an elaborate altar now in course of erection in the Roman Catholic Church of S. Mary, Grand-street, New York, under the direction of the architect, Lawrence J. O. Connor, Esq., of New York. It is constructed entirely of hard woods of various colours: the columns are of ebony, with gilt ornamentations, caps and bases; the table is of satinwood, the plinth being of French walnut; the pilasters of ebony with gilt caps and bases; the ornamental panels throughout are of white holly, inlaid with rosewood to the several designs shown upon them; the top of the table is of grey marble, and the centre panel contains a bronze bas-relief, the Lord's Supper, this last work of art being the gift of the architect. The crucifix is of ebony, with a silver Christ in the background, being finished in dull gold; the kind of nimbus round the arch of tabernacle is in gold, with stencilled ornaments in purple and white, and the space above is coloured blue and dotted with gold stars, the *tout ensemble* being exceedingly rich. The builder is Mr. Newman, of New York, who is also making the extensive alterations to the church.

◆

BARROW CHURCH BELLS.

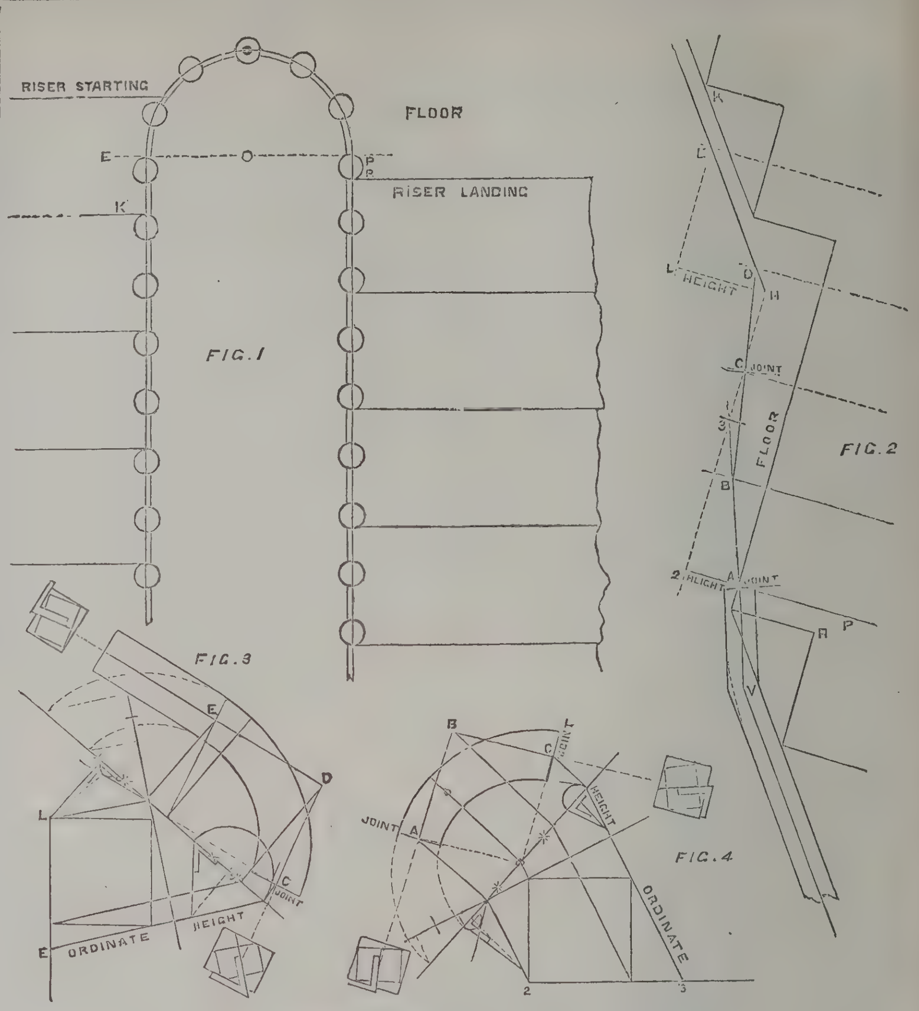
MY article on this subject has unfortunately been lost, and I am obliged to rewrite it from my notes taken some months ago, when the bells were stowed away in the aisle during the rebuilding of the tower. These bells are five in number, and are unusually fine ones for a country village. With the exception of the treble they are all old, and the second and third, which are evidently from the same foundry, are extremely graceful in form. The treble, which measures 32in. across the mouth, and 30in. in height to the top of the canons, has, saving the date, 1822, no inscription and nothing worthy of remark. No. 2, measuring 34in. across the mouth, and 35in. to the top of the canons (which have now in all cases been removed), is dated 1642. The inscription which surrounds the bell just below the shoulder, reads from left to right, as follows:—

·FEDCBA· ·MLKIHG· ·1642· ▽
·FEDCBA· ·LKIHG· ·WVTSRQ·

This alphabet, which is of beautifully-formed Italian capitals, is broken up into groups in the manner indicated by a nicely modelled intermediate fret or running ornament. After the date is a shield charged with three bells, the one in the base being crowned, probably the arms of the founder. No. 3, very similar in every respect to No. 2, measures 37in. each way, the inscription being:—·FEDCBA· ·MLKIHG. ·XWVTS· ·RQPON· ·WVTSRQ· ·1642· ▽ with the same shield after the date. No. 4, which is 39in. each way, has this inscription in old church-text:—"I sweetly toling men do call to taste on meats that feeds the sovle □ 1620." This bell has by way of founder's mark a square shield, bearing the letters G O, one on either side of a Calvary Cross. Above the G is a moon decrescent, and above the O a sun in glory. The tenor, a very fine bell, 42in. in diameter, and 43in. high, has an inscription in old Roman capitals: ·ALL THEM THAT HEARE MY MOVRNFVLL SOWND REPENT BEFORE YOV LIE IN GROVND, after which follows the date 1699. I hope on another occasion to furnish your readers with a description of some of the bells in the neighbouring churches, and not being learned in such matters myself I should be glad to hear from any one who takes an interest in such things, whether in the information thus collected attention has been paid to the right points, or whether there are other measurements wanted, and other facts which require noting.

Gilbert R. Redgrave.

◆



NEW ELEMENTS OF HAND-RAILING.—PLATE XI.

NEW ELEMENTS OF HAND-RAILING.*

(*Continued from page* 388.)

Plate 11.—Construction of Wreath and Ramp Landing on a Level Floor.

FIG. 1. It sometimes happens in platform stairs that the last riser landing has to stand on diameter of cylinder, or within a few inches of it. This plan shows R as face of riser landing, and K the second riser starting. The cylinder, 16in. diameter; the centre line of rail struck with 9in. radius. These dimensions will not be understood as arbitrary.

The system by which the wreath is produced applies to all plans; no matter what size cylinder, nor how the risers are situated, a wreath can be construction to suit.

Let margin on the right be the edge of a board. Set the bevel to any angle, say the dotted line at P. This represents diameter on plan. Let P R equal a corresponding distance on plan. Form square step and riser. Next draw floor-line. This done, set off from A towards E four spaces, each to equal O O on plan. Draw lines; that which has cut at E gives a diameter. Then make E K equal corresponding letters on plan. Next form square step and riser. Let under side of rail rest on steps. Set off half its thickness. Draw parallel cutting through D. The other pitches are discretionary, say D B and B V. This gives a good ramp, but lowers the rail, as it stands over riser R. That, however, is of little consequence in a situation like this, where the wreath and ramp must form a gentle, graceful curve.

The next consideration is the height and direction for the ordinates. These are obtained by drawing through joint C, cutting at 2 and H. Then square over E L. This gives L H as the height for upper part of wreath, and L E for ordinate; which transfer to the extended side of square, Fig. 3. Draw ordinate, and make seat square with it. Let height equal that just given. Draw pitch and form the mould as usual. The tangents E D and D C, to be correct, must equal corresponding letters on pitches. Square sections show application of bevels.

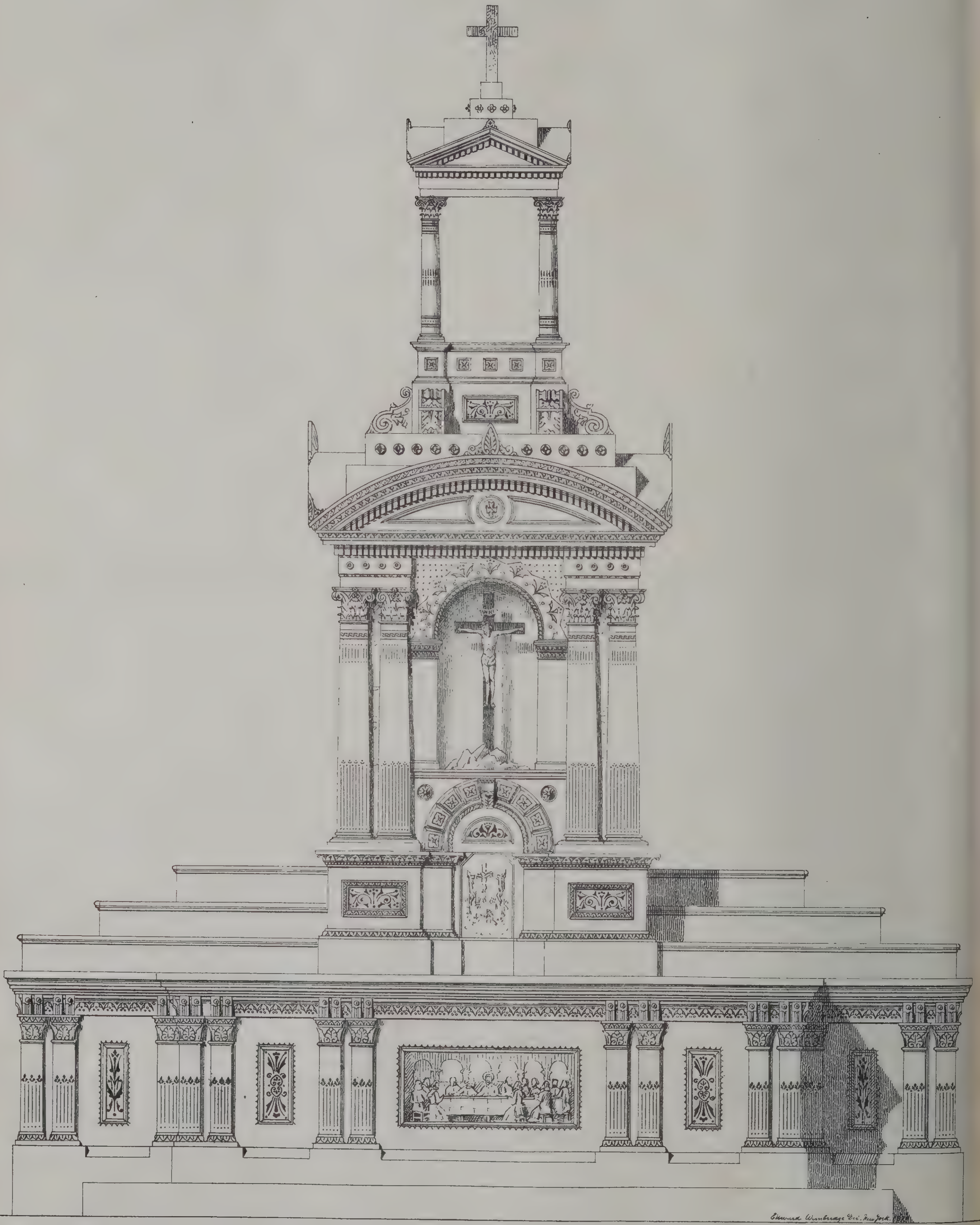
Fig. 4 shows mould for lower part of wreath. Extend one side of square. Let 2 3 equal 2 3 above. Draw ordinate, and make seat square with it. Let height equal that above. Now, draw pitch. Lay the board on, and construct mould. It is understood that the sides of the squares must always equal the radius which struck centre line of rail.

◆

Weston-super-Mare.—It has been arranged, by permission of the Science and Art Department, to hold various science and art classes in the Albert Memorial Schools, Weston-super Mare. The season was opened on Tuesday week, by Mr. J. W. Clifft, who gave some practical lessons on inorganic chemistry. Mr. W. S. Cosbie, master of the school of art, has consented to hold classes in practical, plane, and solid geometry, machine construction and drawing, architectural drawing, and building construction.

---

* This series of articles is a reproduction of Robert Riddell's work on the subject, published in Philadelphia, and by by Trübner and Co., London.



Altar R.C. Ch. of St. Mary, New York.

Photo-Lithographed by Whiteman & Bass, London.

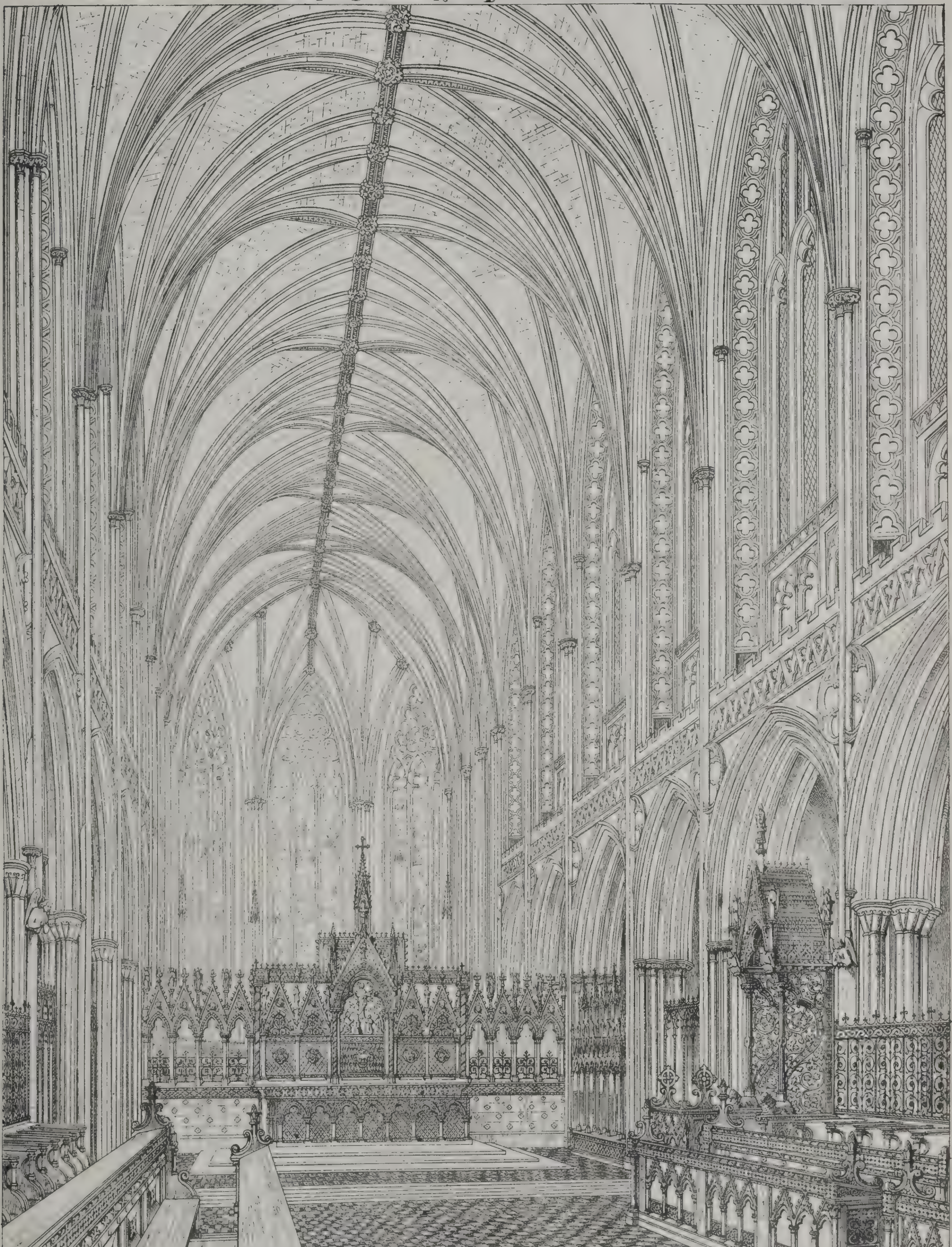


Photo-Lithographed by Whiteman & Bass.

Ely Cathedral Interior.

Civil Engineering.

◆

THE EDUCATION AND STATUS OF CIVIL ENGINEERS.

TWO years since the Council of the Institution of Civil Engineers, impressed with the growing need of greater attention to technical education, resolved to take some steps for the benefit of the members of the profession it represents. A thorough consideration of the subject, during the sessions of 1867 and 1868, resulted in a determination to obtain in the first instance, from the most direct and authoritative sources, full information as to the system adopted for the education and training of engineers, and generally as to the status of members of the profession in various foreign countries, where this professon had assumed an important position. The results of this inquiry are embodied in a volume consisting of some 200 pages.

The first part consists of information respecting the educational institutions in Great Britain and Ireland where instruction is given bearing on the profession of engineering; the second contains similar information with regard to foreign countries, and the status of foreign engineers, and in the third part are printed various suggestions offered to the Council, and extracts taken from various publications bearing generally on the whole subject.

The education of the English engineer is pursued altogether at his own cost, or that of his friends, without any aid from the state, with which the profession is entirely unconnected. It is effected by a process analogous to that followed in trades—by a course of apprenticeship to a practising engineer, generally followed by some further practical experience in a subordinate capacity. *Theoretical* instruction is altogether wanting. If obtained at all, it is owing to the consideration of the master or the industry of the pupil. The practical education is the most perfect possible. If in a good office, the pupil enjoys opportunities of really taking part in actual work, and by this he not only acquires a thorough insight into the practical part of his profession, but acquires business habits, and forms business relations, calculated largely to benefit his future career. There is no doubt that this thorough proficiency in practical matters to a great extent compensates for the deficiency in theoretical attainments, previously mentioned, and that, in fact, in many instances it entirely outweighs it. Facilities for acquiring theoretical instruction, either before or during apprenticeship, are not wanting in this country, although by no means so numerous as could be desired. Those institutions named in the report of the Council as affording such instruction are: King's College, University College, the Royal School of Mines, and the Royal School of Naval Architecture, London; the University of Edinburgh; the University of Glasgow; Trinity College, and the Royal School of Science, Dublin; Queen's College, Cork; and Owen's College, Manchester.

Continental engineering education differs altogether from that given in England. Practical training by apprenticeship is unknown. The pupil's instruction begins quite at the other end, namely by the compulsory acquirement of a high degree of theoretical knowledge, under the direction, and generally at the expense of the Government of the country. A partial amount of practical instruction is given either during this period or afterwards, but in a very different manner, and probably with less efficient results than that imparted in England.

In France the Government Corps of Engineers consists of two classes, the Ingénieurs des Mines, and the Ingénieurs des Ponts et Chaussées, the former ranking higher. Members of either corps are allowed, on certain conditions, to undertake work on the railways, but all other private employment is prohibited. Besides these State engineers, there exists, as with us, a large body of civil engineers differing only from their English brethren in the possession of a kind of official guarantee of their competent education. The Government engineers first enter for two years in the Ecole Polytechnique, from whence they are drafted off by strict examinations into one of two special schools, each suited to the requirements of the respective departments. The pupil there passes another three years, and on passing a final examination enters the corps he is destined for, and begins at once his official duty in the lowest grade. Civil Engineers acquire their education in an establishment called the Ecole Centrale des Arts et Manufactures, also under Government control. Admission is granted by competition (about 200 pupils being received annually), and the course of studies lasts three years. In the first year the instruction is entirely theoretical; in the second year theoretical and practical instruction are combined. At the end of the course a diploma of "Ingénieur des Arts et Manufactures" is granted to all who pass the highest public examination, and an inferior certificate to those only able to pass an inferior test. The holders of these documents seldom fail to find good employment, and beginning in subordinate situations, speedily gain experience and position.

The Prussian Government maintains a corps of Master Constructors (Baumeister). Each of these must have first received a complete general scientific training in one of the ordinary schools or gymnasia. He must then be practically engaged for one year with one of the State Constructors. Next he is admitted into the Royal School of Construction at Berlin, where he remains two years receiving instruction in architecture and engineering. He then passes the first State Examination, and enters upon practical paid employment in a subordinate capacity. After three years thus spent he passes a second State Examination, and is then fully qualified for appointment in the higher grades. The student must, during his eight years of training, fully qualify in architecture as well as engineering; this feature is peculiar to the Prussian system. For private engineers there is a Royal Industrial Academy at Berlin, similar in most respects to the Ecole Centrale of Paris.

In the Duchy of Baden, at the Polytechnic Institution of Carlsruhe, the educational arrangements attract by their perfectness many foreigners.

The Austrian system very nearly resembles the Prussian, except that there is only one educational establishment, and that any students are eligible for Government employment on passing the required examinations. Private practice, either in architecture, surveying, or engineering, is not permitted without a government license.

Russia differs little from France. The information given respecting Switzerland, Italy, and Spain, is extremely scanty. In the United States there is neither instruction or pupilage. Young men, after education at some college or school, appear to enter at once as paid assistants into engineers' offices, and afterwards make their way in the profession as best they can. "Generally," says the late Zerah Colburn, "the system is the same as qualifying merchants, steamboat-proprietors, railroad-managers, &c. Those take to it who like it, and the best young men work up to it and get on."

In the third part of the report we come to the suggestions offered to the Council by professional men and others.

Sir John Rennie recommends that a boy intended to follow the profession of a civil engineer should be sent to some good school until twelve years of age. Thoroughly grounded by that time in reading, writing, composition, arithmetic, algebra, geometry, English, Latin, and Greek grammar, he should go from twelve to sixteen to one of the junior universities, where he should attend the different classes of mathematics, algebra, geometry, plane and spherical trigonometry, astronomy, natural philosophy, geology, geography, chemistry, electricity, and drawing. The assistance of private tutors should be secured, and they by frequent examinations should severely test his knowledge. At sixteen he should be apprenticed to some good practical manufacturing engineer, where he should commence working with his hands, going through all the departments of pattern making, founding, turning, fitting, and erecting steam engines—marine, locomotive, and fixed, and all the variety of machinery connected with them and railways, and acquiring a general knowledge of shipbuilding. After thus spending three or four years he should be sent to some nautical and land surveyor for a short time, to acquire a knowledge of levelling, mapping, &c. He should then study practical hydraulics, such as the principles and management of rivers, embanking, draining, sewage, water supply, irrigation, harbour construction, docks, bridges, lighthouses, masonry, carpentry, earthwork, and materials used in construction. He should practise himself in drawing up reports, plans, specifications, and estimates. So much attention should be paid to architecture as will enable him to design and construct such buildings as railway stations, sheds, and warehouses. The German, French, and Italian languages can be acquired at leisure. By this time the student will be about twenty-three or twenty-four years of age, and if he has creditably gone through the course of education recommended, he may, says Sir John Rennie, "confidently present himself to any engineer in large practice as an assistant at an adequate salary, or he may practise on his own account; *but he must always* bear steadily in mind *that nothing but constant industry and hard work*, combined with a thorough determination *to overcome all obstacles* in his progress, can make him a good engineer.

Mr. Conybeare considers that whereas foreign engineers were some time back deficient in practical experience, and the English in scientific training, the former defect has now been remedied but the latter remains, thus placing the English engineer at a great disadvantage as compared with his foreign brethren. He considers English professional organisation defective, and suggests that the Institution should endeavour to influence for good the scientific education given in the engineering departments of colleges and schools; that no engineer should take a pupil without adequate scientific training; and that engineers in different branches of the profession might advantageously exchange pupils for a time.

The suggestions of Mr. Heppel, Mr. Callcott Reilly, the Society of Arts Committee, Professor Jenkin, Mr. Scott Russell, and Professor Leone Levi, differing more or less, from those quoted, are given; those desirous of consulting them we must refer to the report.

◆

STRAINS IN RAFTERS.

By S. H. Shreve, C.E.

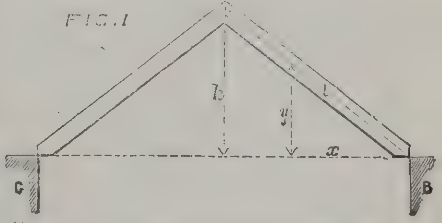
RAFTERS, and more especially trussed rafters, of great length are not in common use, and there may seem to be little need of the results of the investigations of the following paper in general practice. But the obscurity that exists in regard to the strains affecting rafters, and the consequent proof of the value of the methods which I have used in determining the strains in horizontal girders, are sufficient reasons for the following investigations as an intermediate step between the consideration of horizontal and of arched trusses.

Mr. Stoney, in his work on Strains, page 77, says of the strains affecting rafters, "An accurate investigation would be very complicated if not altogether impracticable."

This may be true in a certain sense only, as we cannot tell what lines strains take in a solid beam, whether inclined or horizontal, but it is not true in a flanged or trussed rafter any more than in a girder.

On page 76, Mr. Stoney also makes this singular assertion: "The longitudinal component of W compresses the rafter like a pillar, and accumulates gradually from the ridge, where it equals cipher, to the wall-plate, where it equals $\frac{h\,W}{2\,l}$." Our investigations lead to a very different result.

Let Fig. 1 represent a pair of rafters, A B and C.



Let w = the weight uniformly distributed over the pair.
s = the span of the roof.
l = the length of each rafter.
h = the height of the ridge above the wall.
x = the horizontal distance of any point in the rafter from the wall.
y = the vertical distance of the same point above the wall.
L = the longitudinal strain.

Each rafter is held in equilibrium by the horizontal thrust of the opposite rafter, the uniformly distributed weight of the roof, $\frac{w}{2}$, acting downward, the vertical reaction of the wall, which is $\frac{w}{2}$ and the horizontal reaction of the wall.

Taking moments around a point in the line of the top of the walls, distant x from one abutment, we have for the moment of the reaction of the wall, $\frac{w}{2} \times x$ in one direction; in the opposite direction we have the weight on $x = \frac{w}{s} \times x$ multiplied by the distance of its centre of gravity $\frac{x}{2}$, or $\frac{w\,x^2}{2\,s}$. Subtracting these, we have the moment of the longitudinal strain, which is L, multiplied by the distance at right angles to its direction from the point around which the moments are taken. This distance can be obtained from similar triangles by the proportion,

$$l : \frac{s}{2} : : y : \frac{s\,y}{2\,l}.$$

$\frac{s\,y}{2\,l}$ is the distance, and $L \times \frac{s\,y}{2\,l}$ the moment of the longitudinal strain, and consequently,

$$\frac{L.s\,y}{2\,l} = \frac{w\,x}{2} - \frac{w\,x^2}{2\,s} \text{ and } L = \frac{w\,l\,x}{s\,y} - \frac{w\,l\,x^2}{s^2\,y} \qquad (1)$$

Again from similar triangles

$$x : y : : \frac{s}{2} : h \text{ or } \frac{x}{y} = \frac{s}{2\,h},$$

Whence $\frac{w\,x\,l}{s\,y} = \frac{w\,l}{2\,h}$, and equation (1) assuming this form

$$L - \frac{w\,l}{h}\left(1 - \frac{x}{s}\right), \qquad (2)$$

The values of x in this and the subsequent equations are limited between $x = 0$ and $x = \frac{s}{2}$.

Making $x = 0$, $L = \frac{w\,l}{2\,h}$, the longitudinal strain at the wall; making $x = \frac{s}{2}$, $L = \frac{w\,l}{4\,h}$, the longitudinal strain at the ridge.

In the above case, the moments were taken about a point where the horizontal reaction of the wall has no moment, merely to show that the longitudinal strain varies, and consequently that other strains, or strains having other directions, exist in a uniformly loaded rafter.

To ascertain these strains let A B in Fig. 2, represent a rafter which is a flanged beam, connected to the opposite rafter, and the wall by the upper flange only.

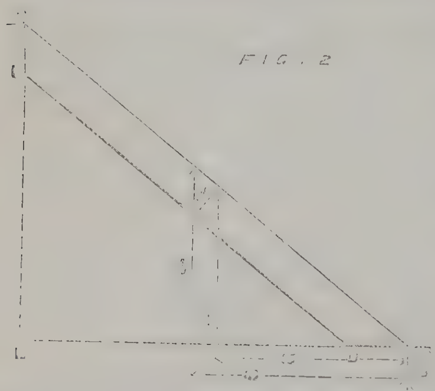


FIG. 2

Let w, s l, h, x, y and L have the same value as before, and let d = the depth of the rafter at right angles to its length.

h, x and y are measured to points in the upper flange.

All the strains between the two rafters pass through A and all the strains to the wall pass through B. From similar triangles,

$$\frac{s}{2} : l : : d : \frac{2\,d\,l}{s},$$

the vertical depth of the rafter.

Taking moments around A, we have the moment of the reaction of the wall, $\frac{w\,s}{4}$, less the moment of the load on A B $\frac{w}{2} \cdot \frac{s}{4}$, which gives $\frac{w\,s}{8}$ for the moment of the horizontal eaction of the wall, and dividing by h we have $\frac{w\,s}{8\,h}$ for the amount of the horizontal reaction.

Taking a point in the lower flange, distant horizontally x from the wall B, to obtain L, the longitudinal strain, in the upper flange at a place vertically over this point; we have,

$\frac{w\,x}{2}$ = the moment of the vertical reaction at B;

$\frac{w}{s} \times x \times \frac{x}{2} = \frac{w\,x^2}{2\,s}$ = the moment of the load on the part x;

$\frac{w\,s}{8\,h} \times \left(y - \frac{2\,d\,l}{s}\right)$ = the moment of the horizontal reaction at B; and

$L\,d$ = the moment of the longitudinal strain in the upper flange;

Whence

$$L\,d = \frac{w\,x}{2} - \frac{w\,x^2}{2\,s} - \frac{w\,s}{8\,h}\left(y - \frac{2\,d\,l}{s}\right) \qquad (3)$$

or

$$L = \frac{w\,x}{2\,d} - \frac{w\,x^2}{2\,d\,s} - \frac{w\,s\,y}{8\,h\,d} + \frac{w\,l}{4\,h},$$

But

$$y : x : : h : \frac{s}{2}, \text{ or } \frac{y}{h} = \frac{2\,x}{s}, \text{ and } \frac{w\,s\,y}{8\,h\,d} = \frac{w\,x}{4\,d}$$

And

$$\therefore L = \frac{w\,x}{4\,d} = \frac{w\,x^2}{2\,d\,s} + \frac{w\,l}{4\,p} \qquad (4)$$

Taking the moments around a point in the upper flange vertically above the point last taken, we have

$$L = \frac{w\,x}{2\,d} - \frac{w\,x^2}{2\,d\,s} - \frac{w\,s\,y}{8\,h\,d},$$

and as

$$\frac{y}{h} = \frac{2\,x}{s},$$

$$\therefore L = \frac{w\,x}{4\,d} - \frac{w\,x^2}{2\,d\,s} \qquad (5)$$

A strain differing from that in the upper flange in character, being tension while the other is compression, and in amount by the constant quantity $\frac{w\,l}{4\,h}$.

In equation (4) L, the longitudinal strain in the upper flange, is greatest when $x = \frac{s}{4}$ or at the centre of the rafter.

When $x = 0$ or $\frac{s}{2}$, L or the longitudinal strain at B or A becomes $\frac{w\,l}{4\,h}$.

If there be any vertical strain passing through a or x, it would not appear in any of the previous equations because it would have no moment; but by taking moments outside of the vertical line passing through x, we can ascertain the amount of the vertical strain.

Let any point b be taken, but for simplicity let it be in the lower flange in a line perpendicular at a to A B. Let x' be its horizontal distance from the wall B, and $y' - \frac{2\,d\,l}{s}$ its vertical height above the wall.

Then, moment of vertical reaction of the wall $= \frac{w\,x'}{2}$.

Moment of horizontal reaction of the wall $= \frac{w\,s}{8\,h}\left(y' - \frac{2\,d\,l}{s}\right)$.

Moment of the load on a B =

$$\frac{w\,x}{s}\left(\frac{2\,x' - x}{2}\right).$$

Let L′ be the longitudinal strain at a, as found from these moments, then,

$$L'\,d = \frac{w\,x'}{2} - \frac{w\,x'\,x}{s} - \frac{w\,x^2}{2\,s} - \frac{w\,s\,y'}{8\,h} + \frac{w\,d\,l}{4\,h}$$

And since

$$\frac{y'}{h} = \frac{2\,x'}{s},$$

$$L' = \frac{w\,x'}{4\,d} - \frac{w\,x'\,x}{d\,s} + \frac{w\,x^2}{2\,d\,s} + \frac{w\,l}{4\,h} \qquad (6)$$

Since L′ and L are the longitudinal strains which meet at a, and as one is greater than the other, their difference can be obtained only in the vertical through a. It plainly follows that the moment of that difference is equal to the moment of the vertical force through a or x.

Let V = the vertical force, then its moment is $V\,(x'' - x)$.

And as $(L' - L)\,d$ is the moment of the difference of the longitudinal strains, therefore

$$(L' - L)\,d = V\,(x' - x) \text{ or } V = L' - L\left(\frac{d}{x' - x}\right);$$

From equations (4) and (6)

$$L' - L = \frac{w}{4\,d}\,(x' - x) - \frac{w\,x}{d\,s}\,(x' - x).$$

Multiplying by $\frac{d}{x' - x}$,

$$V = \frac{w}{x} - \frac{w\,x}{s} \qquad (7)$$

the vertical strain in the web of the rafter. When x in this equation equals $\frac{s}{4}$, $V = 0$; and V reaches its maximum when x equals $\frac{s}{2}$, or when $x = 0$, for in either case it is equal to $\frac{w}{4}$. The minus sign in this equation indicates, as it did in the examples of the horizontal girders, the weight going towards the abutment opposite to the one from which x is measured. In this case V has no value at the centre of the rafter and beyond towards the ridge, the weight passes towards the opposite rafter.

(To be concluded next week.)

EAST END IMPROVEMENTS.

THE Parliamentary notices in connection with the North-East London Tramways and Columbia Market approaches have been issued. Some important improvements are contemplated by the Bill. A tramway is proposed from Bishopsgate-street, by the Great Eastern Railway Terminus, to Crab Tree-row. There will also be a new street commencing at the eastern end of Crab Tree-row, passing thence in a south-easterly direction, and terminating on the north side of Bethnal Green-road, between Union-street and the southern entrance to Thorold-square. The Hackney-road will be widened on the eastern side, and Crab Tree-row on the south side at the eastern end, commencing in the Hackney-road at Cooper's-gardens, and terminating on the south side of Crab Tree-row, 58 yards, or thereabouts, in an easterly direction from the junction of Crab Tree-row with Hackney-road. Crab Tree-row will also be widened, on its southern side, from Gascoigne-place to Virginia-row. There will be a new street, commencing at the south side of Crab Tree-row, at a point distant 60 yards, or thereabouts, in an easterly direction from the junction of Gascoigne-place with Crab Tree-row, and terminating in Virginia-row, opposite the northern end of Turk-street. The Bill may empower the owner or owners for the time being of Columbia Market, either conjointly with the Company or alone, to make and maintain several of the tramways, and it will authorise the use upon one of the intended tramways of railway or other trucks and carriages extending beyond the outer edge of the wheels of such trucks and carriages more than eleven inches on each side, and to authorise the use of all or any of the same tramways for the carriage of fish and other goods. One of the objects of this last-mentioned notice is to procure powers to enable the fish vans or trucks, as loaded at Yarmouth, Lowestoft, Harwich, &c., to be drawn by horses and run along the street in the early morning from the Great Eastern Railway Terminus into the very centre of the Columbia Market premises, and to be actually unloaded there. These fish trucks, later in the day, will be passed on over a tramway through the less frequented parts of Bethnal Green, and returned to the railway authorities by a junction with the tramway of the Great Eastern Railway Company, authorised by the "Great Eastern Railway (Metropolitan Railways) Act, 1870." The power for moving the fish trucks over the tramways into Columbia Market cannot fail to present enormous advantages to the fishing trade.

The Metropolitan Board of Works has resolved to take immediate steps to carry out the proposed widening of High-street, Shoreditch, by setting back the western side, so as to widen to an average width of 70ft., commencing from a point five houses south of Bateman's-row, and ending at Old-street-road. At the last meeting of the Shoreditch vestry, Mr. Whitehead said that some years ago the Whitechapel Board of Works obtained the insertion of a clause in the Railway Company's Bill for the widening of Worship-street, but with the exception of the houses now being pulled down at the east-end of the street, nothing had been done. In his opinion, seeing that the railway companies seemed to shirk their obligations, it would be a good thing to refer the widening of the east-end of Worship-street to the Improvement Committee for consideration, and in order to see whether the railway company could not be compelled to widen the street. A motion to this effect was then unanimously carried.

◆

On the 23rd ult. the Bishop Suffragan of Nottingham consecrated a church at New Basford, which has been open for some years by license.

The Surveyor.

THE RATING OF RAILWAYS.

ON Monday last, Mr. Edward Ryde, M.I.S., read a paper before the Institution of Surveyors in continuation of the subject of "Parochial Assessments," treated by him last year. The following portion of the paper was devoted to the rating of railways.

In its broad principles the occupation of a railway company does not differ from that of a farm, and we have to apply to it the same general law. In each case the rate must be made upon an estimate of the net annual value of the several hereditaments rated thereunto, that is to say, the rent at which the same might reasonably be expected to let from year to year.

If the railway and its stations are situated wholly in one parish the rent which a tenant might reasonably be expected to give for the entire property is comparatively easy of demonstration. But difficulty arises when, as is usually the case, the line and its stations are situated in many parishes and the rating for one parish only is the subject for consideration.

Attention will first be directed to the more simple case, and the method of ascertaining the rateable value of an entire railway and its stations will be explained.

The first element of value is what is called the *gross receipts* of the railway, that is to say, the total yearly earnings of the line from all sources of traffic. The second is the *working expenses* or the outgoings which a tenant has to make in earning the gross receipts.

The balance of gross receipts which remain after deducting the working expenses, is called the *net receipts*, and is the fund out of which the tenant's profit and the landlord's rent must come. Of these, it is obvious that the *tenant's share* must first be provided, because, to take an extreme case, if the net receipts should be found to be insufficient to afford him a proper tenant's profit, he would give no rent to the landlord. But a sufficient tenant's profit being provided, the balance of net receipts remaining is the *rent* which he might be reasonably expected to pay.

From this rent a further deduction has to be made to countervail the depreciation which takes place in the value of the permanent way, and to maintain it in a state to command such rent. The amount of this deduction is the sinking fund which would be required to be laid by yearly to produce a sum sufficient to renew the railway and works at the period of their ultimate decay.

A hypothetical valuation by way of illustration is appended to the paper.

In estimating the occupier's share in valuations of this kind, 5 per cent. for ordinary interest on the tenant's capital, and 10 per cent. for trade profits, is usually allowed. The arbitrator in the case of *The Great Eastern Railway Company and Haughley Parish* found these two amounts to have been properly deducted. It is indeed obvious that, as regards the interest, a tenant requiring to borrow his capital on the security of his rolling stock would have to pay as high a rate as 5 per cent. per annum, or, if it were his own capital, he should be allowed that rate of interest, because he would have no difficulty in obtaining it from a person offering the same security. It may also be presumed as reasonable that no tenant would be satisfied to calculate on a less amount of profit than 10 per cent. on his capital, when taking into account the rent he would pay to his landlord.

Five per cent. is also very commonly taken as a proper insurance fund against risks and casualties, and 5 per cent. for depreciation of rolling stock. These items are more speculative in their character than the former ones; but, being so, a tenant would probably take care to be on the safe side, and it is not reasonable to suppose he would undertake to give a higher rent than would allow him to make ample provision for these contingencies. The depreciation of rolling stock will be more or less according to the sum expended from time to time on its repair.

The question of amount of *tenant's capital* has been the subject of judicial decision. In what is known as *The North Staffordshire case*, it was decided that the amount of tenant's capital is to be actual value at the time the rate is made (and not the cost price) of the rolling stock, and of the movable chattels. But things so attached to the freehold as to become part of it, and things which, though capable of being removed, are yet so far attached as that it is intended that they shall remain permanently connected with the railway or the premises used with it, and remain permanent appendages to it as essential to its working, are not to be taken as things which an incoming tenant would have to purchase of an outgoing tenant, and for which he would have to provide capital.

The *chattels* are defined to be things movable, such as office and station furniture. It was also clearly the intention of the Court to include all manner of tenant's tools and implements necessary for carrying on the business of the company.

The *fixtures* are turn-tables, cranes, weighing machines, stationary steam engines, electric telegraph and apparatus, gasworks, and such like.

The allowance in respect of *renewal of way* was judicially settled in *The London, Brighton, and South Coast Railway (Croydon) case.* In that case it was decided that, although no charge had, in fact, been made, either by way of outlay or setting apart of the gross receipts, still, if the depreciation be, as it probably is, both certain and capable of an annual average, though not proper to be, in fact, repaid annually, it should be met by laying by a certain sum annually. The judges said, "We have considered this question with much attention, and upon the whole, we think that the company are entitled to a deduction on this head. We cannot make a substantial distinction between this and house property, or any other of a perishable nature which must require renewal; and although we think that the company ought to set apart the sum which they claim to deduct, we cannot compel them to do so in this indirect way. And we think that, whenever the time shall come for actually making the restoration, they will be stopped from claiming more than that annual deduction which they now insist on, exactly as a landlord could not claim to deduct the expenses of restoration made by him of a house."

The amount of this deduction is arrived at by estimating the probable duration of life of the several component parts of the permanent way, and by calculating the sum which, if set aside yearly and allowed to accumulate at compound interest, would amount to the sum required, at a definite period, to reproduce particular parts of the permanent way.

The difference between *gross estimated rental* and *rateable value* of lines of railway is difficult to define.

The cost of maintaining the railway is included in the working expenses, and is therefore deducted from the gross receipts before the rental, as described herein, is arrived at.

But the rent which a tenant might reasonably be expected to pay on lease, he providing the sinking fund, for the ultimate renewal, is beyond doubt the *rateable value* of the property.

The second and more difficult branch of the subject, the mode of determining the rateable value of the railway in one of many parishes in which it is situated, has now to be explained.

The same principles and the same general law must still be applied to the inquiry, and so applied that under no circumstances must the aggregate value of all the parts be made to exceed the value of the whole.

In *The West Middlesex Waterworks case* the judges said, "In practice, a tenant of the parochial portion of a canal, railway, gasworks, waterworks, or the like, has rarely, if ever, been known. But a hypothetical tenant must be assumed, and the terms of such a tenancy are not difficult to be conceived. If in the hypothesis some necessary incidents are also assumed to be involved, such as, first, that each part of the apparatus is to continue in joint co-operation, no one tenant of an essential part being able to stop his part; secondly, that the title to the required land is permanent, so that there is no risk of being compelled to move fixed capital; thirdly, that there is land in the required quantity, and capital to be invested therein, and occupants ready to take and work parts yielding profits as tenants at rack rent, and parts not yielding profit as contractors for remuneration, provided any greater profit can be obtained than is ordinary in such relations. If a tenancy of each parochial part be assumed, according to this hypothesis, then, although each parish rates separately upon its own estimate of the value of the part lying within it, and the law gives no power of making all the parishes co-operate in rating the several parts lying in each, nevertheless this court is bound to protect the occupier of such an apparatus from being rated beyond the rateable value of the whole taken together; and it is in reference to this protection that the court must take into its consideration at once, all the separate rates as so many claims upon one given fund, and must apportion that fund, bearing in mind that every addition to the rateable value assigned to one parish must be a substraction from the rateable value which might be given to some other parish."

Following the order of valuation already explained, the first thing to be ascertained is the amount of *gross receipts* due to the given parish.

In the early days of railway rating, a valuation of the entire system of a railway company, trunk and branches, was made, and the rateable value of the whole ascertained. This rateable value was then divided among the parishes in proportion to the length of line in each. This principle became known as "*the mileage principle.*"

In favour of this principle it was urged that parish authorities had no power to ascertain the particulars of profit and outgoings, from a comparison between which the rateable value of the land occupied is to be deduced, both profit and outgoings being affected by circumstances spread over the whole line. On the other hand, it was urged that although as regards the railway company, an entire body with an entire interest, it is matter of indifference how you divide a rate, assumed to be entire for the whole line, yet, as the parishes are bodies with separate interests, there is a manifest injustice in attributing to the same space of land the same proportionable share of the whole rate everywhere (the land in the several parishes notoriously earning the profits, and occasioning the outgoings in very different proportions): because you cannot do this without depriving some parishes of what they should receive, in order to give to others what they should not have.

It was further urged that the ordinary principles of ascertaining the actual rateable value of the land occupied by the company in each parish by the rules which are applicable to any other land occupied by other bodies or persons for other purposes, were departed from by the application of this mileage principle.

Assume, for example, a farm of 300 acres worth to rent 450*l*. per annum. By the principle of equal distribution in proportion to area, each acre of this farm has a rateable value of 30s.

But assume the facts to be that 100 acres are worth 50s. per acre, or 250*l*. per annum, and 200 acres 20s. per acre, or 200*l*. per annum, and assume further that the 100 acres of 50s. land are in parish A, and the 200 acres of 20s. land in parish B.

The rateable value in parish A is 250*l*., in parish B 200*l*.

The application of a principle similar to the mileage principle would give parish A 150*l*., and parish B 300*l*.

The occupier of the farm would be uninjured, but parish A would lose 100*l*. a year, which parish B would gain.

It was soon found that this state of things could not continue, as the mileage principle and the reverse alternately found favour according to the nature of the interest of the contending parties.

The London, Brighton, and South Coast Railway Company contended that they ought to be rated in respect of that portion of their railway situated within the parish of *Croydon*, in such proportion to the net earnings of the whole line of railway as the length of that portion within the parish bears to the whole length of the whole line of railway. On the other hand, *The South Eastern Railway Company*, in the parish of *Westbere*, and *The Midland Railway Company*, in the parish of *Basford*, found it more favourable to say that a rate was bad which was made on exactly that principle.

In February, 1851, the judgment of the Court of Queen's Bench upon this point, was given in these three cases as follows:—

"Upon the legal question," the judges said, "we have no doubt. The poor rate and the principles of its assessment are entirely statutory. Stat. 6 and 7, Will. IV., cap. 96, made expressly with a view to establish one uniform mode of rating for the relief of the poor, prescribes the rule: the rate must be made upon an estimate of the net annual value of the several hereditaments rated thereunto, such value to be arrived at as in manner stated in the first section. The subject is parochial; the inquiry is to be conducted by local authorities with limited powers; if any matters specified in the section are locally situated without the parish,—that is, if any such affect the amount of the 'net annual value' or 'rent at which the same might reasonably be expected to let,'—they will of necessity fall within the range of the inquiry: but beyond this, the principle does not go. This principle, so limited and understood, was not first created by the statute just mentioned. The Court has decided so early as 1827 in the case of *Rex v. Kingswinford*, that it was to be found in the original statute, 43 *Elizabeth, c. ii.*, and since that decision it has been uniformly applied to cases were the same party, whether company or individual, occupies in different parishes land forming one entire property, such as a canal, though the profits may be earned in different proportions and with a different rate of outgoings in each. The value which the land occupied in each parish produces, after the due allowances, is that upon which the occupier is to be rated in each."

On these broad principles, therefore, that the statute provides but one rule, and intends to secure uniformity, the judges ruled against "the mileage principle," and in favour of what has ever since been known as "*the parochial earnings principle.*"

This principle can be very simply explained. Each separate piece of traffic, whether passengers or goods, is taken into account and divided among the several parishes through which it has passed in proportion to the length of line traversed in each parish, *i.e.*, if a passenger pays one hundred shillings for travelling one hundred miles, every mile of railway over which he passes is considered to have earned one shilling. By this means the parishes through which the greatest number of passengers or the largest amount of traffic passes, the distance traversed being duly considered, secure the largest amount of gross receipts, and, under this decision of 1851, which is strictly in accordance with the principles of valuation invariably applied to other descriptions of property railways are valued.

(*To be continued.*)

BILLINGSGATE MARKET.

At last the Court of Common Council has determined to enlarge the area of Billingsgate Market, in preference to removing it to Smithfield, and parliamentary powers will at once be asked for in order to carry out the alterations. No one, says the *Fishing Gazette*, can question the propriety of thus enlarging Billingsgate to meet the greatly-increasing demand for space. The extension and alterations of the market in 1849 included the filling up of the dock between the market (as it then existed) and the Custom House Quay, erection of the 'winkle cellars, the river wall, and the Italian front. The houses doomed to demolition for the proposed extension lie between the market and Darkhouse-lane, and include some well-known places. It is fortunate for the numerous salesmen who will be temporarily dislodged during the progress of these alterations that they have now Columbia Market to which to transfer their business operations.

OXFORD ARCHITECTURAL AND HISTORICAL SOCIETY.

In accordance with the programme laid down for this term, the members and their friends visited S. Mary's Church on Saturday week. Mr. James Parker conducted the examination of the building and described its history. He said the first notice we had of the building was to be met with in the Domesday Survey, wherein, among the possessions held by Earl Albericus of the King, were two houses with the Church of S. Mary. This was probably a wooden building, like most of the Saxon erections. In 1189 there was a rededication of the Church of S. Mary, but this may have been another church, as it is called S. Mary-by-Thames. There is little doubt that a twelfth-century church existed here, as remains of moulded masonry of that period and also of the thirteenth century were found in the recent repairs. It is probable the twelfth century nave remained till it was removed for the erection of the present church, but the chancel was probably rebuilt in the thirteenth century, and Mr. Parker believed the present choir was built absolutely on the thirteenth century foundations. The remains of the thirteenth century work consist mainly of the tower up to the springing of the spire. This work was commenced in 1290, and three of the arches of the tower are of this date. The spire was probably erected in the reign of Edward II., as it is profusely decorated with the wallflower ornament, which is a sure mark of his time. The present chancel and nave were built in the fifteenth century—the chancel first, and the nave immediately afterwards; both were completed in 1492. The choir, or chancel, was probably built by Oriel College, and the nave by public subscription. The Convocation House was built about 1320, and the details of the vaulting are very similar to those of the cathedral spire, which was finished in 1367. The library of All Souls' College was also visited, and the drawings of Sir Christopher Wren, who was a Fellow of that Society, were inspected. The visitors were received in the law library, recently erected under the direction of Mr. Bruton, who briefly addressed the Society on the interest which attached to these drawings, as illustrating the office work as executed by architects of that period. He said there was no doubt many of the drawings were by the hand of Wren himself; others were those of his pupils, by one of whom the well-known twin towers in the large quadrangle of this College were designed. Among these drawings were several of S. Paul's Cathedral, and one for the reconstruction of the streets of London, after the Great Fire of 1666. A plaster cast of the face of Sir Christopher Wren, taken after his death, was also shown to the visitors.

◆

Street Tramways for Bristol.—Notice has been given of an intended application to the Board of Trade for permission to make and maintain tramways through some of the principal streets of Bristol, under the Tramways Act, 1870.

Building Intelligence.

CHURCHES AND CHAPELS.

Balsall Heath.—The corner stone of S. Thomas in the Moor, Balsall Heath, was laid on Monday. The style of the building in course of erection will be Early Decorated, 76ft. long, 41ft. in width. The nave will be 42ft. high, with north and south aisles of 10ft. in width, divided into four bays, with bold arches resting upon ornamental cast-iron columns. The roof will be of open timber construction, covered with slates. The chancel will have a rich five-light tracery window, with crocketed canopy and buttresses, above which, at the summit of the gable, will be a canopied niche to receive figure of patron saint. It is intended to accommodate about from 400 to 500 persons. Messrs. Bateman & Corser are the architects, and Messrs. Hardwick the builders.

Barnstaple.—The Independent Chapel, Barnstaple, was reopened on the 23rd ult., after considerable enlargement and reconstruction. The enlargement has been effected by adding the site of a pre-existing house at the east side of the chapel. The old roof has been retained, but has been transformed into a very bold and effective open roof. The roofing over the annexed portion is, however, new, and being at right angles with the main roof gives a transeptal effect, which is marked externally by bold gables on the north and south sides. On the south, the transept is continued behind the main building to the depth of 18ft., opening into it by a large pointed arch, in which is placed the organ (on the ground floor), there being a gallery above for school children. On each side are four lofty cast-iron columns, with moulded caps, bases, and bands, supporting beams and arches of timber, forming very effective arcades, and receiving the feet of the centre roof. At the eastern end is a large recess, 12ft. wide, in the thickness of the wall, having a lofty pointed arch. The spandrel will ultimately be filled with Maw's mosaic work. The pulpit stands on a platform, and is constructed of pitch pine on a base of red oak. The passages are paved with Maw's tiles. The seats are open, framed in red fir, with pitch pine ends. The galleries are of red deal. The front towards Cross-street is lofty and bold, and the eastern doorway is elaborately sculptured. The front has a deep bold base of Lundy Island granite, surmounted by slopes and strings of Doulting stone. On the upper stage are five lofty pointed windows. All the windows are filled with glass of a pale Cathedral tint. The materials of the front are German's down stone, Doulting stone, and Bath stone. The style adopted by the architects (Messrs Gould & Son) may be termed Middle Pointed, the leading features corresponding with those characteristic of German Pointed work of the fourteenth century. The stonemasons' work has been executed by Mr. Pulsford, the carpentering by Mr. Oatway, and the bricklaying and plastering by Mr. Thomas Brown. The carving is by Mr. Harry Hems, the ironwork by Messrs. Hunt & Harper and Messrs. Willshire, and the painting and glazing by Mr. Clarke. The entire cost has been about £2,200.

Bristol.—The corner stone of the new church of S. Mary the Virgin, Tyndall's-park, Bristol, was laid on Wednesday week. The style adopted by the architect (Mr. J. P. St. Aubyn, of London) is Decorated, of about the middle of the fourteenth century. The edifice will seat from 720 to 750 persons, and will consist of chancel, 40ft. long, a transept on each side of the chancel, and a nave with two aisles. The nave will be 84ft. 6in. long, and 26ft. wide, and the aisles will be 12ft. wide. The great inequality of the ground towards the south affords a means for introducing a couple of vestries underneath, and a wide staircase will be provided at the east end of the church. There will be a lofty clerestory, and a steeple at the west end. The total cost of the building, exclusive of site, will be between £8,000 and £9,000. Mr. J. Diment has taken the contract for the first section of the building (chancel, transepts, two bays of the nave, and vestries for the clergy and choir) at £980.

Highclere (Hants).-On Saturday week the Bishop of Winchester consecrated the new parish church (dedicated to S. Michael and All Angels), which Lord Carnarvon has erected at his sole cost, the architect being Mr. G. G. Scott. The church is in the Early English style, the material used being flint, with Bath stone dressings. The total cost is about £6,000.

Liverpool.—On Sunday week the Bishop of Liverpool opened the (Roman) Catholic Church at Ince Blundell Hall, which has undergone a complete decorative renovation. In the semicircular portion of the apse of the sanctuary a large figure of Our Lord in majesty, with uplifted and outstretched arms—the gold background taking the outline of a cross—dominates the whole church. On either side is a single adoring angel. The execution is in encaustic by Messrs. Guffens & Swetz, of Belgium. Over the high altar is a coloured painting of the Holy Family coming out of the Temple, by Flatz, and four other large paintings by the same artist, in chiaroscuro, with handsome architectural frames, decorate the side walls of the nave. The arabesques and other decorative drawings have been most successfully and harmoniously applied by Mr. Park.

Llanvetherine.—The parish church of Llanvetherine, in the county of Monmouth, was reopened on Thursday, November 17th, after restoration. The roof, which is a waggon-panelled one, has been thoroughly restored and re-covered with slates, with a Bath stone ridge, and the gables have been re-coped. A new three-light window has been inserted on the north side of the nave, and the other windows thoroughly restored and re-glazed throughout. The defective parts of the walls have been restored with new masonry, and the inside plastered. A new panelled ceiling has been placed in the tower with a new open termination in pitch pine to the tower screen. The old shaft and bowl of the font have been removed and new ones substituted. The warming is effected by one of Gurney's stoves. The total amount of cost is about £400, the whole of which has been defrayed by the rector, the Rev. F. C. Steele. The works have been carried out by Mr. Wm. White, contractor, of Abergavenny.

New Brighton.—A new Wesleyan Chapel, which has been erected in Rowson-street, New Brighton, Liverpool, was opened on Wednesday week for public worship. The architect is Mr. Henry H. Vale, F.R.I.B.A., president of the Liverpool Architectural Society, whose designs were selected in competition, and have been carried out by Messrs. J. & T. Mason, builders, of Egremont.

Torquay.—A new Congregational Church at Torr-hill, Torquay, was opened on Thursday week. The building is Gothic, of the Decorated period in style, and comprises nave, with north and south aisles, and an apsidal projection at the east end of the nave, with a vestry on either side. The nave is separated from the aisles by arcades of Bath stone, supported by ornamental iron columns. The roof is open-timbered, with curved ribs carried on moulded corbels. Over the aisles and at the west end of the nave are galleries, the fronts of which are formed with chamfered panelling, the top-rail and board being carried on ornamental iron standards. The galleries are supported by iron brackets cast to the columns supporting the arcades. At the north-west corner of the building is a massive square tower, which rises to a height of nearly 100ft. It has a belfry stage, on each side of which is a three-light window, filled with ornamental zinc-work. The open seats in the body of the church are of pitch pine, stained and varnished. The walls are of native limestone, with Bath stone dressings. The church has been erected from a design by Mr. J. Rowell, architect, by Mr. Matcham, builder, of Plymouth, Mr. E. Richards, of Torquay, acting as clerk of the works, and Mr. James Windsor as foreman of works. The work connected with the heating and lighting has been carried out by Mr. E. B. Whipple, of Plymouth. The total cost is £5,500.

Tunbridge Wells.—On Tuesday, the 22nd ult., S. Stephen's Mission Church, in the parish of S. James, Tunbridge Wells, was opened under license of the Archbishop of Canterbury. The church is a small but substantial and appropriate building, from a design by Mr. Blomfield, and consists of nave, chancel (duly raised and screened), organ-chamber and sacristy, and sanctuary suitably fitted, and there is a bell-turret at the west end. The chancel walls are stencilled; and the eastern window, a triplet, is filled with stained glass by Heaton, Butler, & Bayne. A handsome coronæ of iron and brass was given by Mr. Wright, clerk of the works.

BUILDINGS.

Bury S. Edmunds.—A fine malting-house is now in course of erection in Northgate-street, Bury S. Edmunds. The building is 186ft. long, the width being 66ft., and it is four stories high. The steep is for 300 coombs, and the kiln is unusually large—64ft. by 50ft. The latest improvements have been adopted in the construction of the kiln. It is built with trussed girders, and the floor is laid with Fison's kiln tiles. The other part of the ground floor is occupied by two offices, a large cistern, and a working floor. The upper stories are supported by iron columns, and all the working floors are covered with gypsum. There will be nine hydraulic lifts (worked by two engines) for raising the grain and malt, the barley being raised in the first instance from the carts to the topmost story, and then screened down by gravitation. Mr. Rednall is the builder; the ironwork and the hydraulic lifts being in course of construction by Mr. R. Boby, of Bury.

Cambridge. — Extensive improvements are about to be carried out at Pembroke College, Cambridge, under the direction of Mr. Waterhouse. The probable outlay will be £70,000.

Loughborough. — The Loughborough Union-house has lately had its infirmary accommodation increased by two wings of four rooms each, and other alterations have been effected, the total cost being £1,179. Mr. W. Main, of Loughborough, was the contractor, Mr. John Sudbury, of the same place, being the architect.

Newton Abbot.—A special meeting of the Local Board has recently been held in reference to certain alterations proposed by the contractor, Mr. J. Harvey, in the construction of the tower and entrance of the new market. Mr. Harvey objected to taking the risk of carrying out the architect's (Mr. Chudleigh) design, as it was weak in construction, and he could not proceed, excepting under protest, unless some alterations were made. He produced an amended design, which, after some discussion, was accepted. Mr. Chudleigh protested against this course, and asserted that his design is not only perfect but stronger than that proposed by Mr. Harvey. In this he is borne out by Mr. Ashworth, architect, whose opinion he has taken.

Nottingham.—A plot of ground on the Humberstone-road, Nottingham, is about to be adapted by the Midland Railway Company for the erection of a new and extensive goods station. The tenders for the various works ranged from £21,000 down to £14,400, the lowest one being that of Messrs. James Hall & Son, of Nottingham, which has been accepted.

Sheffield.—New schools attached to S. William's (Roman) Catholic Church, Sheffield, have been opened. The designs were made and the work directed by Messrs. M. E. Hadfield & Son, and the contract was executed in about four months. The schools are designed to accommodate, in all, 800 girls and infants, at a cost of £800.

Southport.—Baths are now in course of erection, by the Southport Baths and Assembly Rooms Company, Limited, at Southport. The material, externally, is Burnley Pierrepoint facing, with Longridge stone dressings. The whole of the baths will be on the ground floor, and will be well lighted by top-lights. All the internal walls will be plastered, and the first-class swimming baths arcaded, with moulded caps and architraves. The principals of the large roofs are of cast-iron, elliptical in form, cast in two pieces, and will spring from moulded corbels, at level of pilaster caps. The stairs at back of office lead to a board-room, 40ft. by 20ft., with retiring room and lavatory adjoining; and a mezzanine floor is formed between this and the ground floor. The whole will be opened for public use by May next, and the total cost, including engineer's work, will be about £23,000. Messrs. Horton & Bridgford, of Manchester, are the architects; Mr. H. C. Beloe, of Liverpool, is the engineer; and the contract has been let to Messrs. Swindells & Little, of Manchester.

Topsham.—On Tuesday last a new lecture-hall was opened with a learned address from E. B. Penny, Esq., of Altamira. The building consists of a large lecture-hall, dining-hall, soup kitchen, and other private rooms, which have been very satisfactorily erected by Mr. John Periam, of Topsham, builder, from plans and under the supervision of Mr. E. H. Harbottle, architect, of Topsham, the whole of the expenses being defrayed by Mr. Penny, the cost being about £1,000.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

To Our Readers.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

Letters relating to advertisements and the ordinary business of the Paper should be addressed to the EDITOR, 31, TAVISTOCK STREET, COVENT GARDEN, W.C.

Advertisements for the current week must reach the office not later than 5 p.m on Thursday.

Received.—J. W., E. S., W. H. S. & Co., J. H., J. & Co., W. P., J. Harvey, F. C. D., J. B. & Sons, D. H., A. S., R. W. Simmons, T. R., A. J. L., H. L., Hy. Horncastle, M. S. Junr., J. W., J. B. & Co., C. B. A., W. Y., H. C. Z., C. L. E., J. P. S., W. B.

J. Hicks.—Drawing to hand. It is rather too uniform in tint. Why be afraid of Haddon? It will most likely appear.

C. S. S. Johnson.—Photo-lithography. Smooth white paper should be used. Pencil sketching will not do. Washes and colours should be avoided.

G. G. Hoskins.—The photo. and description to hand. They will be used in the Building News.

Thos. Potter.—Please send tracings.

S. W. W.—Sketch of Newstead Abbey returned.

T. Lomas Watson.—The outline sent is not too large for a double-page illustration.

J. Malsohn.—The sketch to hand.

J. Barsley.—Sketches received and returned.

F. G. Green.—Sketch of staircase returned.

J. R. Allen.—Sketch of cross returned.

E. Starr.—Sketch of nave arcade returned.

J. H. T.—Sketches returned.

J. W. Woodsend.—Sketch received.

P. E. M., Elveden Hall.—Next week.

Correspondence.

THE AIR AND HEALTH QUESTION.

(*To the Editor of the* Building News.)

Sir,—Your correspondent, "E. L. G.," referring to the above question in the Building News of the 25th inst, says:—"If any building reader asks, Where there is an unbloody structure in this respect? I can tell him where."

The gist of "E. L. G.'s" letter seems to be that without the free ingress below, and egress above, of equal supplies of pure and impure air respectively, no apartment of whatever size can be wholesome, and the buildings referred to as "unbloody," are probably those, whether churches or unceiled attics or garrets, which allow the impure air to escape through interstices of the roof, or special outlets therein. Or, more briefly, that air-tight ceilings are inconsistent with wholesome ventilation, whatever the cubic contents of rooms or buildings. But if "E. L. G." means more than this, I, as a reader of the Building News, though not a "building reader," will be glad to hear more of the "unbloody buildings" alluded to. J. G.

November 28.

"THE CRITERION."

Sir,—An advertisement by the Messrs. Spiers & Pond has created a great deal of interest, and I am afraid will result in no less disappointment. The conditions appear to me to impose an impossibility. I do not see how such a building can be erected for the specified £20,000. Cubing it roughly at a shilling per foot, I found the cost work out to £30,000, and with only a moderate amount of enrichment; I do not see how it can be done for less. To avoid quarrelling at the end of the affair, it is advisable the competitors should consider this point at the beginning, as, unless the designs are proved to be capable of execution for the sum named in the conditions, none of the competing architects will be employed, the probable issue shadowed forth being that a *hash* will be made of the selected designs, by, perhaps, a surveyor, who will carry out the work, and that, adding extra to extra, the cost ultimately will be *at least* the sum I have named for it, and no one will be satisfied.—I am, &c., P. E. M.

ARCHITECTS AND THEIR DRAWINGS.

Sir,—The question as to the ownership of architects' drawings is of such importance, both to the profession and the public, that I shall make no apology for addressing you a few lines on the subject. It is, I believe, of the last importance, that the question should be definitely fixed, and of comparatively less importance in what way it is decided. For, whatever loss and inconvenience an adverse decision might cause to the profession, it is at least suffering more from the fact of its being still an open question, and from the feeling on the part of the public that we are conspiring against them, and that their interest is not our interest.

Let me just note the absurdity of a statement in the Lord Chief Baron's speech in the case of Ebdy *v.* M'Gowan. In deciding that the client was entitled to the plans when the building was not executed, he said: "If an architect could retain his plans, which involved, for example, an estimate of £10,000, his employer would have to pay 3 per cent. on that, or £300, and get nothing in return; that was to say, in a case in which the building was never commenced, he paid that for nothing, or for services which were useless to him" (See Building News, Nov. 18). Now if the building be not proceeded with, the plans are not worth £300. Why pay the architect at all if the L. C. B.'s be the correct view of the case? Let there be no mistake on this matter. If you obtain the advice of a lawyer and do not follow it, you get nothing for your money; if you solicit medical advice and do not follow it, you get nothing for your money; and if you obtain the advice of an architect, though illustrated by any number of drawings, and do not follow it, you should get nothing for your money. Otherwise it is degraded into a mere trading in plans, or as if the medical profession were reduced to the level of mere druggists.—I am, Sir, &c, T. L. W.

Glasgow, Nov. 28, 1870.

"SOMETHING WRONG WITH THE INSTITUTE."

Sir,—An article signed "W. Y.," which appeared in the Building News of last week, contains the following statement respecting the finances of the Institute:—

"Its income last year was £1,952, out of which somehow (in coffee and conversazioni most likely) it contrived to spend £1,819, leaving only a balance of £133."

Allow me to say that this is a mistake. The expenses of the Institute for last year were as follows:—

Rent, fuel, and light	£264
Stationery, postage, and advertisements	54
Salaries and wages	386
Publication of Transactions: reporting, printing, and illustrations	211
General printing	159
Furniture, fittings, and repairs	50
Refreshments at evening meetings	22
Expenses of conversazione	116
Purchase of books for library	37
Money prizes and medals awarded	82
Donation to the Architectural Museum	25
Petty disbursements and sundries	22
	£1,428

The surplus income, viz. £384, was invested—not in coffee, but in consols.—I am, &c.

£ s. d.

CUSTOM OF GLASGOW ARCHITECTS.

Sir,—In reference to the article in your journal by "Solomon Set-square," I think the system in use in Glasgow would please him, and if in use those figures in Mr. Burges's cabinet, to which he refers, would be a memento of the past. I may mention beforehand that here every trade is separate, and very rarely is a building given to one contractor, who may sub-let the trades he does not follow. The method in which the majority of Glasgow architects proceed is this: A schedule of each trade is furnished by a measurer. (A surveyor here devotes his attention mostly to land.)

In this schedule is entered every article connected with, say the stone-work, from the foundations to the cornice, the dimensions of each stone when of a large size, as in the case of lintels, sills, mullions, &c., with their girth when moulded, and the quantity of each in square or cubic yards or feet given. To this the builder attaches a price at which he is willing to give the various articles. The work is measured while in course of erection or when finished, and anything extra over the quantity taken in the schedule, is paid for at the price which the builder has attached to that article. And the only way in which a builder may lose by the job is that in his eagerness to get the contract he may have put down an insufficient price. The sizes of materials taken in the schedule helps to regulate the architect when making out his details, which can be reduced or enlarged as he sees fit to lessen or increase the cost of the building. The measurer has no responsibility other than that his quantities should be correct, and each tradesman pays half the cost of measuring his part of the work. Hoping these few facts may be of use to Mr. S. S.-S., I am, &c., St. Mungo.

Intercommunication.

QUESTIONS.

[2051] ARCHITECTS AND THEIR PUPILS.—Is it not usual for architects to give their assistants a fortnight's holiday in the year at their (the architects') convenience, although they pay overtime when upon competition and other works of importance; also, is it usual for architects to deduct a portion of a week's salary in time of illness?—Justice.

[2052] STAMPS ON AGREEMENTS. — What is the proper legal stamp for a yearly agreement, and also for an agreement for three years, and does the value of the stamp vary with the amount of rent?—R. L. B.

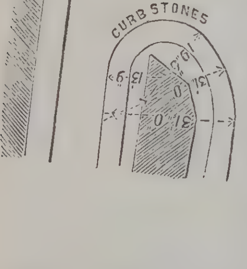
[2053] ZINC FOR CEILINGS.—Information is sought regarding the application of enamelled zinc in the formation of ceilings, in lieu of lath and paster; it has been introduced in America. Querist wishes to know whether it has at all been introduced in England or Ireland, and if so to whom application should be made for particulars.—W. Stirling, Dublin.

[2054] PARTNERSHIP.—What is the customary percentage considered an equivalent for money paid for a partnership in an architect's business, exclusive of amount allowed for time and services?—J. W.

[2055]—DIAMETER OF SHAFT. — Can any of your readers inform me as to the formula for ascertaining the required diameter of a shaft, 14ft. long, to carry safely the weight above it, as in the clerestory of a church; and also how to ascertain the weight of the wall itself when it has a pointed vault above it of brick or tile, 14in. at springing and 6in. at crown? The span is 32ft.—J. T. B.

[2056] SCHOOL BUILDING.—Where can I get a copy of the rules and regulations for school buildings issued by the Board of Education?—D. D.

[2057] SETTING OUT A CURVE.—Can any of your readers inform me of an accurate method of setting out a curve as shown in the annexed sketch? The radius according to the figured dimensions —Turn.



[2058] JOINERS' WORK. — Being in the habit of reading your valuable paper, and finding you take the trouble of answering queries from your various supporters, I am induced to ask from you the favour of a reply as to the following condition inserted in an estimate for the fitting-up of the joiners' work of a villa now building. This is the condition: — "My estimate includes bath and lavatory *complete*, fit up *with mahogany*." By the term *fitted up in mahogany*, I was led to suppose it to mean as expressed—to be properly cased and completed in mahogany. Would you, or any of your correspondents, favour me with what is meant by, and understood by the trade to mean, being fitted up in mahogany? and you will much oblige—R. O.

[2059] VARNISH OR POLISH USED UPON WALKING STICKS, WHIP HANDLES, Etc.—Can any of your numerous correspondents kindly inform me what kind of varnish or polish is used upon walking sticks, whip handles, &c., and oblige?—H. H.

[2060] MEASUREMENT OF MOULDINGS. — A short time since a correspondent asked for information as to the best method for obtaining correct profiles of existing mouldings. Mr. Sharpe, M.A., F.R.I.B.A., answered this query at the Architectural Association on Friday week by saying "they could be measured with facility by means of the little instrument called the cymagraph." Will any fellow student briefly describe this little instrument, giving its price and maker?—M. B. A.

REPLIES.

[2017] MOUNTING TRACINGS.—There is a point of some importance which has not been referred to by any of those who have taken part in the "Intercommunication" on this subject in your columns, viz., that mounted tracings cannot be depended on for accuracy, because they do not expand or contract equally, but more one way than another, according to the grain or fibre of the paper, thus altering the proportion of the drawing. Sometimes it contracts one way and expands the other. As a case in point I may mention that I recently observed a section of an architrave (which in the original drawing was 9in. broad) come out exactly 9¼in. in the mounted tracing, while something which had been 9in. lying across the sheet the other way came out 8¾in. Perhaps some of your correspondents may have discovered some way of obviating this. The tracing was mounted in the usual way on a sheet of paper stretched on a board.—D. H. K.

[2023] LIGHTNING CONDUCTORS.—It is hard to see how "E. L. G." sticks to such a low value for copper in the face of such researches as Dr. Matthiesen's, and to say that "hardly any commercial copper has one-third the conductivity of the pure metal" is not supported by facts. If H.M.S. *Endymion* is referred to, the main mast was protected but not the fore mast, and it (not the mainyard) was struck and shivered; this is an important difference. If "E. L. G." would favour me with a résumé of his ideas and experience on the whole question, omitting any attacks on architects and all who are capable of vulgar errors, he might enable some one to earn an extra percentage honestly.—H. A. L.

[2023] LIGHTNING CONDUCTORS — I am much pleased and considerably enlightened by the discussion on this subject, especially by the replies of "E. L. G." This gentleman cautions us against the use of conductors of insufficient capacity, but omits to give us any rule by which we may determine what is a conductor of "sufficient capacity."—H. A. B.

[2025] CEMETERY CHAPELS.—There is no objection, I believe, to their being under one continuous roof, with only one "receiving" hall between them. But this is not a good arrangement, for I have seen great confusion arising from there being two funerals at the same time, one in each chapel. This arrangement is to be seen at the Bedford cemetery.—J. T. B.

[2027] SCAGLIOLA.—It is unknown how this imitation of marble is made, even by the men in the manufactory, who only mould it into the required forms and polish it, after the proprietor has himself made the mixture in a private room. I believe any marble can be successfully imitated. It is used in the columns of the corridors, &c., at the India House.—J. T. B.

[2038] ROOFS.—I think "L. M.'s" question will be answered by saying that in such cases where no lead is visible it is put underneath instead of on the top.—J. G., Lancaster.

[2039] REMOVING INK STAINS.—Try a weak solution of chloride of lime and repeated applications. I have found it succeed.—H. A. L.

[2046] LODGE AND VILLA ARCHITECTURE.—There is a book by Mr. Mackenzie, and it is published at 22, Paternoster-row, London.—J. G.

[2047] TAKING OUT QUANTITIES. — The money for taking off quantities is generally taken when the contract is signed; and, of course, the contractor must be paid extra for all works done not given in the quantities.—D. D.

[2047] TAKING OUT QUANTITIES.—I believe that the surveyor's fees are generally paid by the contractor about the time of receiving his first or second instalment. The surveyor should be held responsible when short.—P. W. H.

[2049] CONCRETE BUILDINGS. — "Practice" will find that with 14 yards of gravel and 1 yard of cement he will not be able to build 14 yards of finished walling, as he would seem to anticipate, but probably about 12 yards. With the usual description of gravel the shrinkage is about one-fifth to one-seventh, the cement and water going for nothing. I pointed this out in the *Builder* for October 9, 1869, wherein I said that Mr. Tall's formula, as supplied in his book, being copied word for word into the builders' price books, was likely to lead builders and others very much astray in their calculations. And this is not the only error that may be made if Mr. Tall's calculations are accepted as correct, for he says, "with 7 yards of gravel use 1 yard of cement of 16 bushels to the yard," whereas it takes 21 bushels to make a yard, and then even your correspondent must assume that a two-bushel sack holds 2 bushels, as cement measures considerably less when emptied out of the sacks than it did when put in. Cement for concrete purposes should weigh 112lb. per bushel, and the weight is as important a matter as the measurement, the former being in ordinary cases the best criterion of quality. If, not having actually proved the nature of the gravel your correspondent intends using, there exists any doubt as to its fitness, I should advise "Practice" to try a small piece, say a cube yard of 9in. walling.—W. W.

[2050] LIGHTNING CONDUCTORS.—If the finial is on a roof without hips or any similar metal connection with the gutters, "P. N. T." will find the readiest and and cheapest way to supply one will be inside, or at least under the slating. Any outside the slates involves the substitution of copper for iron, and awkward or unweatherproof attachments, besides unsightliness. Inside, a single iron rafter is all that is needed.—E. L. G.

WATER SUPPLY AND SANITARY MATTERS.

Blackburn.—The Blackburn Corporation are taking steps to carry into effect a system of irrigation for disposing of the sewage of the borough. Mr. Joseph Brierley, C.E., of Blackburn, has been appointed to superintend the work.

Bridport.—In compliance with a memorial presented to the Privy Council, complaining of the default of the Bridport Town Council, as the Local Board of the borough, in carrying out the provisions of the Local Government Act, 1858, with respect to sewerage, water supply, and other matters, and praying for an inquiry, on Wednesday last, the 30th ult., Mr. Arnold Taylor, one of Her Majesty's inspectors, held an inquiry at the Town-hall.

Hurworth-on-Tees.—On Thursday week a meeting of the committee appointed by the ratepayers of Hurworth, near Darlington, to superintend the proper sewerage of the township was held at the Methodist Schoolroom, to receive and consider the plans prepared by Mr. George Dickinson, C.E. Mr. Dickinson proposes to drain the village of Hurworth, and the terrace known as Hurworth-place, on the irrigation principle. After some discussion, the plans were adopted, subject to the approval of the Local Government Act Office. The cost is estimated at from £1,100 to £1,200, exclusive of the land taken for the purposes of the outfall and the disposal of the sewage, the profit from which was calculated to equal if not exceed the interest on the expenditure.

New Water Schemes.—We are glad to notice that the Cleveland Water Company, who obtained their first Parliamentary Act in the Session of 1849, for supplying Skelton, Brotton, and Saltburn with water for domestic and other purposes, from the Lockwood and Moorsholm Becks, are about to apply for another Act to extend their borders and supply Lofthouse, Guisbrough, Upleatham, Old and New Marske, Redcar, and other places. Their present capital is £12,000, and they propose to increase it to £40,000. The Guisbrough people are prosecuting a scheme for supply themselves from another source, in opposition to the Cleveland Water Company.

Richmond.—The Richmond Vestry has thrown down the gauntlet to the Thames Conservators in the matter of the disposal of the town sewage. The conservators refuse any further to extend the time allowed for the diversion of the sewage from the Thames, unless the vestry will give an undertaking to complete the necessary works within twelve months; but this the vestry declines to do, preferring to appeal to Parliament on the matter. The difficulty of obtaining land for irrigation purposes is, according to the *Lancet*, alleged as the reason for the action of the vestry.

The Exeter Supply of Water. — The Exeter Local Board, acting on the recommendation of a committee, have resolved to offer the Exeter Water Company £50,000 for their works, such sum to be exclusive of the company's debenture debt, with a stipulation that the offer should not be allowed to prejudice the future action of the Board. The Water Company have entered into a contract with Sir S. Northcote, enabling them to obtain their supply for the city from the river Exe, above its junction with the Culme, where the water is much purer than it is at the point of the company's present works.

Torpoint.—A vestry meeting was held at Torpoint, on Thursday week, to receive the report of a committee appointed at a previous meeting to determine upon the best means to be adopted to secure a full and adequate supply of water for the town. The committee reported that they found that the Health of Towns Act, 1848, and the Local Government Act, 1858, were both so expensive in working as to be unsuited to a town or parish with a small population. The Sewage Utilisation Act, 1865, however, gave to the parish vestry all the powers, not only for procuring a supply of water, but for doing all that the sanitary condition of the parish rendered necessary, that were vested in the local Boards of Health, under their respective Acts; and not only was power given, but the responsibility of doing all that was necessary in regard to the water supply, draining, and other sanitary measures, was made to rest on the parish vestry, which, in the absence of any other body, would be recognised as a sewer authority. If a sewer authority provided a supply of water, the occupier or owner of a house, not having a supply could be campelled to take it at a cost not exceeding 2d. per week. A majority of the ratepayers could divide the parish, but as the desirability of doing so in some measure depended upon the expense to be incurred the committee recommended that before such a step was decided upon a committee should be appointed with power to ascertain where a supply could be obtained, and at what cost. It was resolved to obtain professional assistance in order to carry out this recommendation.

Water Supply of the New Lambeth Workhouse.—Mr R. Taylor has drawn the attention of the Lambeth Board of Guardians to the quantities being taken out for the new workhouse in Renfrew-road. The plans were not ready, as promised to the old Building Committee three months since. If the contemplated cisterns were constructed, which would only hold 600 gallons of water, that would be insufficient to supply the varied requirements of such an establishment. It was intended that the cisterns should hold 2,600 gallons instead of 600 only. Mr. Paris, the architect, relied on a constant supply of water, but the reliance was a fallacious one, inasmuch as, even with a constant supply, the engine would at times run out of gear, and pipes would burst. Then there had not been an inch of room set apart for laying the gas pipes, and the drainage, moreover, had been overlooked. All these were matters requiring looking into, and he hoped that a committee would be formed to confer with Mr. Paris (the architect) and Mr. Nixon (the surveyor) in reference to these things. Such a committee has been appointed.

Our Office Table.

Associated Arts' Institute.—It was announced that Mr. J. M. Capes, M.A., of Balliol College, Oxford, would deliver a lecture on Saturday evening last at the rooms of this Institute, the subject being "Vulgarity in Art." Mr. Capes, however, sent a letter stating that, owing to a violent attack of neuralgia, he could not be present, and expressing a hope that he might have the opportunity of reading a paper before the Institute on some future occasion. When that occasion arrives, we hope he will have a larger audience than that which assembled on Saturday evening last, which numbered just twelve persons, including the chairman. In the Building News a fortnight ago we reported a meeting held to consider what steps should be taken to instil new life into the Institute. Either the resolutions then come to have not been put in operation, or they have signally failed. Certainly the vitality of a society would seem to be at a very low ebb when, out of 130 members, only a dozen deign to come down to listen to a man of Mr. Capes's standing and ability. The time of the meeting was occupied by a discussion, started by Mr. Day, a painter, the thesis laid down by him being that the artist should represent things, not thoughts or ideas. In this view he was opposed by Mr.

Donaldson, Mr. Wilson, Mr. H. C. Boyes, Mr. L. F. Day, the chairman (Mr. Lemon H. Michael), and others, who all maintained that the greatest art was idealistic, not realistic.

FRESCOES BY MR. HERBERT. — The London correspondent of the *Western Morning News* says :—"The admirers of Mr. Herbert's grand fresco in the Houses of Parliament—'Moses giving the Law on Mount Sinai'—will be glad to learn that the same artist is engaged upon a companion work—'Daniel giving Judgment in the Case of Susannah and the Elders.' He hopes that he may some day make up a trio with a picture having for its subject 'Our Lord delivering the Sermon on the Mount.' But art is long and life is short, and Mr. Herbert trusts too much to inspiration to be a rapid painter."

LAW COURTS, OLD AND NEW.—Last week (says the *Law Journal*) Mr. Justice Blackburn reprimanded the usher of the Court for opening or not opening the windows on foggy mornings, and subsequently told persons with coughs to leave the Court. Likely enough clergymen would be glad to order coughers to leave the church if they had authority to do so. The learned judge ordered the gas to be put out, which resulted in partial poisoning, as the gas could not be turned off as soon as it was put out. Upon candles being called for, the usher informed the Court that there were only two candlesticks, which the judge shared with the counsel. It did not occur to the usher to invest twopence in potatoes and extemporise candlesticks. When the new Law Courts are built there will be no more discomfort for lawyers or suitors. And when will the new Law Courts be built? Perhaps our great-grandchildren may see them commenced.

"PLANS AND SPECIFICATIONS INCLUDED."—We cannot help noticing an advertisement in a west of England journal, of an enterprising firm of contractors, who, in view of the approaching operations rendered necessary by the new Education Act, offer to "contract for the erection of new schools, or the enlargement of existing schools, at the rate of from £2 15s. per head, according to accommodation and situation. *The Plan, Specification, and Superintendence (by an experienced and highly-competent architect) included.*" If these gentlemen cannot attend to their own business, we may perhaps afford architects an opportunity of taking care to entrust them with no work which may require the interference of the "highly accomplished" whom they keep on the premises.

PROPOSED NEW BRIDGE ACROSS THE TEES.—The North Eastern Railway Company has notified its intention to apply to Parliament during the ensuing session for power to construct a railway from near Coopen-Bewley to Middlesbrough, crossing the Tees between Newport and Billinghamlane landing-place. It is intended to cross the river by means of a swing bridge, constructed 40ft. above the level of high-water mark, with a centre pier in the middle of the river, and an opening of 120ft. on each side.

MECHANICAL AMATEURS.—The grand opprobrium of the amateur, says the *English Mechanic*, is that the results of his *expenditure* are so absurdly trivial. With lathe and apparatus adequate to produce not models of things but the things themselves, he rests content, and more than content, with the former, and the beautiful is seldom or never combined with the useful. Friend—true friend—as we hope ever to be to amateurs, we would therefore suggest a much wider boundary to their undertakings. We do not ask that they shall turn the pillars of their matrimonial four-posters—if such venerable institutions still remain; but the thousand and one light and artistic fittings of study, drawing-room, boudoir (a word for the ladies), and such-like shrines of domestic life, would certainly not be unworthy of the amateur's exertions. With lathe, fret-saw, amateur carving machine, and similar appliances, few of such articles need be beyond the amateur's powers of construction, especially as he is supposed to have a fair acquaintance generally with cabinet-making and such trades as are akin to that of the turner. Imagine the pleasure and satisfaction of having a study fitted up entirely by one's self in oak! Bookcases, writing-table, chairs, and all such affording proof that an amateur can really work, and that he is not a mere exquisite who cannot defile his hands with any dust less precious than that of ivory. In such a case the opprobrium would wholly vanish—there would be something to show and something to use, to say nothing of a satisfactory return for the original outlay. Then, again, pass to the amateur in metal work. If he makes his own lathe fittings, slide-rest, spiral apparatus, and so forth, he does well; but the little model, beautifully finished as it may be, of an engine, only suggests that he is capable of much more if he would launch out a little from the amateur's ordinary course.

PROFESSIONAL USAGE WITH REGARD TO PLANS.—The *Solicitors' Journal*, after giving a short summary of the recent case of Ebdy *v.* M'Gowan, refers to the plea of professional usage set up by the plaintiff. After quoting Mr. Baron Bramwell's remark to the effect that the usage was suicidal, as its own absurdity destroyed it, our legal contemporary says :—"It seems that, even if this usage were not in itself absurd, it would not affect persons in fact unacquainted with it. Usage forms part of a contract only on the ground that the parties knew or ought to have known of its existence. This doctrine cannot apply to such a usage as that set up by the plaintiff. Of course, the defendant might have been bound to pay for the plans, although he was not to receive them, if he had contracted so to do—or, which might be the same, if he had in fact known of the alleged usage, and had dealt with the plaintiff upon that basis. Under the circumstances, however, the defendant was entitled to the plans, as the Court so construed the contract."

UNFOUNDED CHARGE AGAINST A SURVEYOR — One of the Bethnal Green Poor Law Guardians, named Ward, has, it would seem from a local journal, on several occasions endeavoured to trump up charges reflecting on the integrity of the surveyor to the Board, Mr. Mundy, but in every instance these charges have been of a vague, rambling nature, and the accuser has not been able to substantiate them. Lately Mr. Ward made a charge against the surveyor of removing gravel from the Board's schools at Leytonstone to a cottage belonging to him (Mr. Mundy). The Board having heard Mr. Ward's statement, Mr. Goodwin, another guardian, suggested that a committee should be appointed to inquire into the matter. Mr. Mundy protested against such a course, for what Mr. Ward had said had appeared in the local papers, and no committee had a right to go into such a matter privately. After some further conversation, Mr. Ward said he had no charge to bring against Mr. Mundy. Eventually, Mr. Edwards moved, "That the conduct of Mr. Ward in bringing such frivolous charges against the surveyor is reprehensible, and that the Board expresses its full confidence in Mr. Mundy." Mr. Ward: I rise to second it (laughter). The chairman: I think it very indecent on your part to do so. Will any other member do so? Mr. Paul: I'll second it. Mr. Ward: Then I'll support it. The motion was then carried unanimously.

COST OF CHURCH BUILDING AND RESTORATIONS DURING THE PAST FIFTY YEARS.—In a sermon preached at S. Luke's Church, Torquay, on Sunday week, the Rev. R. R. Wolfe stated that £15,000,000 had been expended on new churches since 1818, besides £10,000,000 on restorations, &c., while £5,000,000 had been expended on parsonages, and £15,000,000 on schools. He showed that out of the 10,000 parishes in England, only 1,355 were without national school buildings.

◆

MEETINGS FOR THE ENSUING WEEK.

MONDAY.—*Royal Institute of British Architects.* (1) "Considerations on the Selection of Building Sites." By Professor D. T. Ansted. (2) "Memoir of the late Signor Raffaelli Politi, of Girgenti." By Professor Donaldson. 8 p.m.

Society of Engineers.—Continuance of paper "On the Economics of Railway Maintenance." By Mr. E. S. Crompton. 7.30 p.m.

Society of Arts.—(Cantor Lectures.) "On Artists' Colours and Pigments." Lecture III. By F. S. Barff, Esq., M.A. 8 p.m.

TUESDAY.—*Institution of Civil Engineers.*—"On the Theory and Details of Construction of Metal and Timber Arches." By M. Jules Gaudard, C.E., of Lausanne. 8 p.m.

WEDNESDAY. — *Society of Arts.* — "On the American System of Associated Dairies, and its Bearing on Co-operative Farming." By Mr. H. M. Jenkins. 8 p.m.

◆

Chips.

New church schools at Eastwood, Rotherham, were opened on Thursday week. The cost, exclusive of site, has been £700.

Biggleswade parish church was reopened on Wednesday last, the 30th ult., after restoration.

The church of Sweptone was lately reopened after restoration.

Llanthony Abbey (erecting under the superintenof Father Ignatius) is progressing, the windows are in, and the whole of the first portion contracted for is now habitable. Three inmates have been admitted during the octave of All Saints.

The Bideford Local Board is negotiating for the purchase of the gasworks of that town.

Mr. James Pennethorne was knighted on Monday.

The site for the new market hall at Whitchurch is being rapidly cleared.

In a deep cutting near Gravesend, on the new line between Yate and Thornbury, the men have come on a lode of very rich lead ore. Some years ago shafts were sunk near here, but the work was abandoned.

The *Guardian* says an anonymous donation of the sum of £1,000 is promised towards the £12,000 required to complete the nave of Bristol Cathedral, minus the western tower.

The system adopted at the Ealing works for purifying the sewage, to which we alluded in our last number as having proved so successful, is the invention of Lieut.-Colonel Scott, R.E., of the South Kensington Museum.

Mr. Patrick McDowell, R.A., the eminent sculptor, has tendered the resignation of his membership to the Royal Acadamy on the score of ill-health. His group of "Europe" is now being fixed at the base of the Albert Memorial in Hyde Park. The retirement of Mr. McDowell will create a second vacancy in the ranks of the Academicians.

The new method of forming mosaic pictures of porcelain tesseræ, patented by Messrs. Minton & Co will shortly be described at the Society of Arts, a paper on the subject being announced by Mr. Alan S. Cole.

The public are being invited to subscribe for the capital necessary to buy up Evans's Supper Rooms and to carry them on under a company (limited).

The second Winter Exhibition at the Royal Academy of the works of the Old Masters has received so many promises of liberal support from the owners of valuable pictures that the collection will probably be even more attractive than was the former one.

◆

Timber Trade Review.

Sale yesterday, prices at per Petersburg standard :—

Christinestadt yellow, 6*l* 15*s* to 7*l* 15*s*; do. white, 6*l* 5*s* to 7*l* 15*s*; Fredrickshald yellow, 5*l*; do. white, 5*l*; Gefle 3rd yellow, 8*l* 10*s* to 9*l* 10*s*; Hudikswall 1st yellow, 8*l* 15 to 10*l* 5*s*; do. 2nd yellow, 9*l*; do. 3rd yellow, 7*l* to 9*l* 10 *s* do. 1st white, 7*l* 5*s* to 8*l* 10*s*; Holmsund mixed yellow, 8*l* to 8*l* 10*s*; do. mixed white, 7*l* 5*s*; Kramfers mixed yellow 5 8*l* 5*s* to 8*l* 10*s*; do. 3rd 7*l* 5*s* to 8*l* 15*s*; do. mixed white, 7*l* 10*s* to 7*l* 15*s*; do. 3rd white, 7*l* 10*s*; Lockno yellow, 6*l* 15*s* to 7*l* 15*s*; Lulea mixed yellow, 7*l* 10*s* to 8*l* 5*s*; do. 3rd yellow, 7*l* to 7*l* 15*s*; Nyham mixed yellow, 10*l* 5*s* to 10*l* 10*s*; do. 3rd yellow, 9*l* 5*s*; Petersburg 1st yellow, 12*l* 10*s* to 13*l* 10*s*; do. 1st white, 8*l* 5*s* to 9*l*; Quebec yellow pine, 12ft 3 × 11, 1st bright, 18*l* 15*s* to 19*l* 5*s*; do. 2nd bright, 12*l* 15*s*; do. 1st floated, 17*l*; do. 2nd floated, 12*l* 10*s*, do. 3rd bright, 8*l* 15*s*; do. 3rd floated, 8*l* 5*s* to 9*l* 10*s*; Sundswall yellow, 7*l* to 8*l*.

Timber, per load of 50 cubic feet.—Moulmein teak, 5*l* 10*s*; Sierra Leone oak, 3*l*; Stettin oak crooks, 4*l* 10*s*; Quebec oak, 6*l* 5*s*; do. birch, 3*l* 5*s*; do. walnut (per cubic foot), 2*s* 2*d* to 2*s* 3*d*; Pitea yellow balks, 1*l* 6*s*; Petersburg lathwood, per fathom of 216 cubic feet, 5*l* 5*s* to 5*l* 10*s*; Riga wainscot logs, per 18f. cube, 2*l*; Scandia handspikes, per dozen, 2*s* 6*d*; Adelaide yellow pine, per load, 12*s*; Quebec masts, 11*s*; Calcutta knees, at per 100 pieces, 16*s* Rangoon crooks, at per 100 pieces, 12*s*; do. crooks and knees, at per do., 16*s*; Moulmein wedges, at per do., 5*s* 3*d*; Sydney trenails, at per 1,000 pieces, 1*l* 2*s*; Liberia masts, 1*l* 7*s*; St. John's and Picton birch, 1*l* 15*s* per load; Dantzig real crown deck deals, 1*l* 6*s* per 40ft. 3in.

At per 120 12ft., 3 × 5in.—Trois Pistoles 1st spruce, 11*l* 15*s* to 15*l* 10*s*; do. 2nd spruce, 10*l* 15*s* to 13*l* 5*s*; Quebec 1st spruce, 18*l*; do. 2nd spruce, 10*l* 15*s*. to 14*l*; do. 3rd spruce, 12*l* 15*s*; Miramichi spruce, 11*l* 10*s*; do. 4th quality, 9*l*; Christiana 1st quality white, 16*l* 5*s* to 16*l* 10*s*.

At per 120 12ft. 2½ × 6½in., Dram 2nd yellow, 6*l* 15*s* to 7*l* 5*s*; do. 3rd yellow, 5*l* 15*s* to 6*l* 5*s*.

◆

LATEST PRICES OF MATERIALS USED IN CONSTRUCTION.

METALS.

LEAD —

Pig, Foreign	per ton	£17	12	6	£17	15	0
" English W.B.	do	19	15	0	20	0	0
" Lead Co.	do	18	15	0	19	0	0
" Other brands	do	18	5	0	0	0	0
Sheet Milled	do	19	0	0	20	0	0
Shot, Patent	do	20	10	0	21	0	0
Red or Minium	do	19	15	0	20	10	0
Litharge, W.B.	do	0	0	0	0	0	0
White Dry	do	27	0	0	0	0	0
" ground in oil	do	0	0	0	0	0	0

COPPER :—

		£	s.	d.	£	s.	d.
British—Cake and Ingot	per ton	£67	0	0	67	10	0
Best Selected	do	68	10	0	69	0	0
Sheet	do	71	0	0	73	0	0
Bottoms	do	75	0	0	0	0	0
Australian	do	69	0	0	72	0	0
panish Cake	do	0	0	0	0	0	0
Chili Bars, cash	do	63	10	0	64	0	0
„ Refined ingot	do	66	0	0	69	0	0
Yellow Metal	per lb	0	0	6½	0	0	6¾

IRON :—

		£	s.	d.	£	s.	d.
Pig in Scotland, cash	per ton	£2	10	1½	0	0	0
Welsh Bar, in London	do	7	2	6	7	10	0
„ Wales	do	6	10	0	6	12	6
Staffordshire	do	7	10	0	8	0	0
Rail, in Wales	do	6	5	0	6	10	0
Sheets, single in Loudon	do	9	10	0	10	5	0
Hoops, first quality	do	8	10	0	9	5	0
Nail Rod	do	7	5	0	7	15	0
Swedish	do	9	10	0	10	15	0

TIMBER.

	£	s.	£	s.
Teak load	£12	10	13	10
Quebec, red pine	3	15	4	15
„ yellow pine	4	0	4	10
St. John N.B. yellow	0	0	0	0
Quebec Oak, white	6	5	6	10
„ birch	3	15	5	0
„ elm	4	5	5	5
Dantzic oak	5	5	6	15
„ fir	2	12	4	10
Memel fir	2	15	4	0
Riga	3	3	3	7
Swedish	2	7	2	18
Masts, Quebec red pine	4	0	5	5
„ yellow pine	4	0	5	5
Lathwood, Dantzic, fm	3	0	5	0
„ St. Petersburg	4	0	6	0
Deals, pr C., 12 ft. by 3 by 9 in.,				
Quebec, white spruce	12	0	17	0
St. John, white spruce	12	0	14	0
Yellow pine, per reduced C.				
Canada, 1st quality	18	0	19	10
2nd do.	12	15	13	10
Archangel, yellow	11	10	12	10
St. Petersburg, yel.	12	0	13	0

	£	s.	£	s.
Finland	£7	0	£8	0
Memel	0	0	0	0
Gothenburg, yellow	8	10	10	10
„ white	8	0	8	10
Gefle, yellow	10	10	12	10
Soderham	8	10	12	0
Christiania, per C., 12 ft. by 3 by 9 in. yellow	10	0	12	10
Flooring boards, per sq. of 1in., first yel	7	6	10	6
First white	7	0	9	6
Second qualities	6	0	7	0
PUMICE STONE pr ton	6	0	8	0
OILS, &c.				
Seal, pale per ton	35	0	0	0
Sperm body	78	0	79	0
Cod	36	0	0	0
Whale, Sth. Sea, pale	36	0	0	0
Olive, Gallipoli	43	0	0	0
Cocoanut, Cochin, ton	44	0	0	0
Palm, fine	39	0	0	0
Linseed	30	5	30	10
Rapeseed, Eng. pale	47	10	48	0
Cottonseed	28	0	34	0

◆

Trade News.

◆

WAGES MOVEMENT.

MASONS' STRIKE AT WITTON PARK IRONWORKS.—A strike has occurred amongst the masons employed at Bolckow, Vaughan & Co.'s Witton Park Ironworks. The grievance is said to be that the managers want the men to have only half an hour, instead of an hour allowed for dinner.

◆

TENDERS.

ACTON.—For the finishings to six houses, for Messrs. Hensman & Nicholson, solicitors. Messrs. W. Waymouth & Son, architects :—

Macey	£3269
Merritt & Ashby	2699
Foster	2651
Preedy & Sons (accepted)	2230

HERTS.—For an Ionic temple, and terraces and landscape gardening at the seat of the Earl of Strafford, Wrotham Park, Herts. Messrs. S. Shrubsole & J. L. Stewart, architects, No. 1, Wellington-street, S.E. :—

Goddard (accepted)	£922

HOUNSLOW.—For factory, for Mr. E. W. Payne. Mr. J. Gale, architect :—

King & Sons	£1195
Sewell & Sons	1174
Nye	1119
Shepherd	1100
Henshaw	1097
Hiscock & Sons	1050

LIVERPOOL.—For No. 1 contract for sugar refinery, to be built in Love-lane, Liverpool, for Messrs. Henry Tate & Sons. Mr. W. J. Mason, architect. Quantities supplied by Mr. Geo. Northcroft, surveyor, Liverpool :—

Kirkham	£5467
Litt & Wilkinson	5279
Tomkinson	4968
Readdie	4966
Nicholson & Ayre	4867
Burroughs	4862
Roberts & Robinson	4730
Holme & Nicol	4727
Urmson	4704
Rome	4657
Haigh & Co. (accepted)	4637

SOUTHWELL, NOTTS.—For new infirmary for the Southwell Union-house. Mr. John Sadbury, Loughborough, architect :—

Main	£1135	0
Fisher	1059	0
Bickmore	976	0
Smith & Parkins	955	12
Fretwell	950	0
Marriott, Wartnaby, & Scott	950	0
Stevenson & Weston	940	0
Collyer	890	0
Duke (accepted)	850	0

WESTMINSTER.—For the erection of a Wesleyan Methodist Chapel, Horsferry-road. Messrs. Wilson & Willcox, architects. Quantities supplied by Messrs. Corderoy & Co. :—

Bayes & Ramage	£8268
Carter & Son	7625
Nightingale	7595
Nutt & Co.	7582
Hill, Keddell, & Waldram	7570
Niblett & Co.	7553
Colls & Sons	7459
Higgs	7443
Longmire & Birge	7326
Hobson	7215
Henshaw	6983
Manley & Rogers	6853
Myers & Son	6692
Cullum (accepted)	6682

CONTRACTS OPEN FOR BUILDING ESTIMATES.

WALSOKEN, Dec. 9.—For the erection of farm buildings on the estate of the Rev. James William Bellamy, in Walsoken, near to the Smeeth-road Station, on the Great Eastern Railway. Wm. Adams, architect and surveyor, Wisbech.

STOCKTON, Dec. 17.—For the Coatham Victoria Hotel. Charles J. Adams, F.R.I.B.A., architect, Stockton-on-Tees.

LEEDS, Dec. 7.—For the various works required in the erection of premises in Park-row. Geo. Corson, architect, 5, South Parade, Leeds.

GLOUCESTER, Dec. 5.—ENGLISH PRESBYTERIAN CHURCH. For the erection of a church and schools. Medland & Son, architects, 9, Clarence-street, Gloucester.

FOSDYKE BRIDGE REPAIRS, Dec. 6.—For the repairs of Fosdyke Bridge, situate in the parish of Fosdyke. F. T. White, Clerk of the Peace, Clerk of the Peace's Office, Boston.

DOVER HARBOUR, Dec 10.—For the supply of materials during the year commencing the 1st day of January, 1871, comprising :—Timber, bricks, cement and lime, ironwork, and ironmongers' goods, oils and colours, tallow, &c. James Stilwell, Registrar, Dover.

SUTTON (SURREY), Dec. 11.—For the erection of the following buildings at Sutton, viz., a new school for about 800 children, with administrative offices and laundry buildings to the same; a new wing to the present infirmary; a new infirmary, laundry, and mortuary building; and a nursery building. Joseph Burgess, clerk to the managers, Vestry Hall, Walworth.

WEDNESBURY TOWN-HALL, Dec. 17.—For the erection of a Town-hall at the rear of the Local Board of Health's offices. John Tandy Bayley, clerk to the board, Holyhead-road, Wednesbury.

EXTENSION OF TIME FOR TENDERS—HALIFAX CORPORATIOL WATERWORKS, Dec. 13.—Hebdon extensions.—Widdon reservoir and main conduit thence to Pecket well, Contract No. 7. J. E. Norris, Town Clerk, Town-hall, Halifax.

LANCASHIRE AND YORKSHIRE RAILWAY, Jan. 3.—For the construction of a branch railway (except the ironwork for bridges) from Padham to Rosegrove, being in length 2 miles 21 chains. William S. Lawn, secretary, Hunt's Bank, Manchester.

WOOLWICH UNION, Dec. 7.—For the erection of a dispensary and relief offices, &c., for the said Union. Edward Brough Sargent, clerk to the guardians, Union Offices, Edward-street, Woolwich, S.E.

ECCLESHILL, Dec. 7.—For the construction of two reservoirs, drainage, road making, &c., at Tunwell Mill. S. Firth, architect, Undercliffe.

CARDIFF, Dec. 7.—For making and completing a map of the borough of Cardiff, and the adjoining district, upon a scale of 2ft. to the mile. Henry Bowen, engineer, Cardiff.

LEEDS UNION, Dec. 7.—For the erection of a new lodge at the workhouse, Beckett-street. Henry Lampen, clerk to the guardians, Leeds.

MAIDSTONE, Dec. 8.—For the erection of a ward for refractory patients, at the Kent County Lunatic Asylum. Beale & Hoar, clerks to the visitors of the Asylum, Maidstone.

SHIPLEY, Dec. 10.—For the erection of a villa residence, &c., at Baildon Green Wood, near Shipley. John Barton, architect, St. Mark's, Dewsbury.

STONE (Staffs.), Dec. 10.—For the proposed new schools and teacher's residence in Stonefield. Mr. William Durose, Stone.

BIRMINGHAM, Dec. 24.—For the erection of a mansion house at Coleshill Park, near Birmingham. Middleton & Goodman, architect, 1, Bedford-buildings, Cheltenham.

◆

BATH STONE OF BEST QUALITY.

RANDELL, SAUNDERS, and COMPANY, LIMITED. Quarrymen and Stone Merchants, Bath. List of Prices at the Quarries and Depots; also cost for Transit to any part of the United Kingdom, furnished on application.

BATH STONE OFFICE,
[ADVT.] Corsham, Wilts.

◆

BANKRUPTS.

(TO SURRENDER IN THE COUNTRY).

Augustus Lea Bricknell, Stratford-upon-Avon, engineer Dec. 8, at Warwick.—Henry Lee Driver, architect, Dec 12, at Greenwich. George Hunter, East Dereham, engineer, Dec. 10, at Norwich.—John Parker, Brighton, builder, December 13, at Brighton.—Alexander Shackleton, Windhill, near Idle, builder, Dec. 6, at Bradford.—Jonathan Swallow, Manchester, builder, Dec. 22, at Manchester.

BANKRUPTCIES ANNULLED.

John Bennett, Gresham-buildings, Basinghall-street, architect, Nov. 21.—C. E. Holliss, Lombard-street, timber broker, August 15.

PUBLIC EXAMINATIONS.—ACT, 1869.

Dec. 20, M. Tombleson, Walthamstow, builder.—Dec. 15, G. J. Whiteley, Farnham, plumber.

DIVIDEND MEETINGS.

Dec. 21, J. C. Ekens, Stockwell, builder.—Dec. 14, T. G. Wrigley, Oldham, builder.—Dec. 5, T. Love, late of Blackpool, builder.—Dec. 9, W. Weale, Shrewsbury, stonemason.

DECLARATION OF DIVIDEND.

A. Dury, Warwick, decorative painter, div. 1s. 3d.

◆

PARTNERSHIPS DISSOLVED.

Horsfall Brothers, Heckmondwike, stonemasons.—Kearsley and Co., Manchester, carriage builders.—Duley and Co. Northampton, ironfounders.—Hooper and Corke, Park Prospect, Westminster, surveyors.—Rimmer & Son, Liverpool, timber merchants.—J. and H. Ward, Manchester, builders.

BREAKFAST.—EPPS'S COCOA.—GRATEFUL AND COMFORTING.—The very agreeable character of this preparation has rendered it a general favourite. The *Civil Service Gazette* remarks :—"By a thorough knowledge of the natural laws which govern the operations of digestion and nutrition, and by a careful application of the fine properties of well-selected cocoa, Mr. Epps has provided our breakfast tables with a delicately flavoured beverage which may save us many heavy doctors' bills." Each packet is labelled—JAMES EPPS & Co., Homœopathic Chemists, London.

ARCHITECTURAL PHOTOGRAPHS & BOOKS.

A Set of 8 PHOTOGRAPHS (mounted in cardboard), from the original drawings of the PRIZE DESIGN of the MANCHESTER TOWN HALL competition. Size of the photograph 12 by 10. Price £2 2s.

A LITHOGRAPH of the HOTEL DE VILLE AT HAMBURGH (the prize design), by G. G. SCOTT, Esq., Architect. £1 1s.

A PHOTOGRAPH (mounted on cardboard) of the ASSIZE COURTS AT MANCHESTER by A. WATERHOUSE, Esq. Architect. Size of the photograph 26 by 21. £1 1s.

The above, being very suggestive designs, would be useful to all first-class offices

EXECUTED EXAMPLES OF CHURCHES, CHAPELS, MANSIONS, and VILLAS, to be completed in Five Divisions, at 10s. 6d. each. The first and second divisions only just out.

These examples are by different architects, and they contain the actual cost of each building, and the materials used, together with the ground and chamber plans.

CHURCHES and CHAPELS erected by G. BIDLAKE, Esq., Architect, Wolverhampton, with the plans and the actual cost of each erection, together with the best arrangements of the seats, both in the gallery and the ground floor. 12s. 6d.

This little book is quite a favourite with the profession on account of the well-known ability of the architect in designing and carrying out the different Nonconformist Chapels and Schools Houses, &c., in different parts of England.

The above Photographs and Books can be had from the Publisher, S. BIRBECK, Bookseller, 10, Church-street, Lozells-road, Birmingham.

Now ready, handsomely bound in cloth gilt, gilt edges, price 5s. each.

WONDERS OF ARCHITECTURE. With 59 Illustrations. A Comprehensive Popular Sketch of the Chief Architectural Achievements of Ancient and Modern Times, including a Description of Notable Buildings which have been erected.

"The little work before us is a great help to the formation of our tastes and the study of a great science."—*Naval and Military Gazette.*

CASSELL, PETTER and GALPIN, Ludgate-hill, E.C.

WONDERS OF ACOUSTICS. With over 100 Illustrations. Comprising a Popular Account of the Phenomena of Sound; describing its Effects, Propagation, Intensity, Velocity, Reflection, Resonance, and Quality; with Anecdotes and Legends, &c. &c.

CASSELL, PETTER, and GALPIN, Ludgate-hill, E.C.

ARCHITECTURAL DRAWINGS by WILLIAM BURGES. This work will be ready for publication in about six weeks' time The subscription list, in which there remain fifty vacancies, will go to press at the end of this month. The work contains 75 plates of architectural details, roofs, masonry, &c, besides four plates of costume. Price of the work bound, £3 10s. Subscribers' names will be received by Mr. W. Burges, 15, Buckingham-street Strand, W.C.

THE TRADES' ACUMEN: a Table for readily Ascertaining the number of yards, feet, inches, and parts in anything that requires measuring. No trade should be without it. Post free for 13 stamps.

Published and Sold by F. FUNKENSZTEIN, 23, Great Queen-street, Holborn.

Just Published, in One handsome Volume, price 28s.

RIDDELL'S CARPENTER, JOINER, HAND RAILER, AND STAIR BUILDER, complete. "To one and all this work will be found most useful."—*The Builder.*

Edinburgh: THOMAS C. JACK. London: SIMPKIN & CO.

FOUR LETTERS ON COLOUR IN CHURCHES, ON WALLS, AND IN WINDOWS. By EDMUND SHARPE, M.A., F.I.B.A. Price Sixpence.

London: E. and F. N. SPON, Charing-cross.
Birmingham: S. BIRBECK.

By THOMAS MORRIS, Architect.

A HOUSE FOR THE SUBURBS, Socially and Architecturally Sketched, with a Prefatory Glance at the Great City. Third Edition, with Designs, 12s. 6d.

How to Value, Claim, Protect.

A CLUE TO RAILWAY AND OTHER Compensation for Property and Person, the Nature and Value of Estates, and Principles of Parochial Assessment 4s. 6d.

A DISCOURSE upon DILAPIDATIONS, Ecclesiastical and General; their Nature and the Principles of Assessment succinctly demonstrated. With Appendix on Party-walls, &c., 4s.

A POPULAR OUTLINE of PERSPECTIVE or Graphic Projection, Parallel, Diagonal, Pan-angular, Graceful, 3s. 6d.

London: SIMPKIN, MARSHALL, and CO.

BELGIAN WINDOW GLASS.—S. Funkenstein, Sole Agent, 25, Great Queen-street, Lincoln's Inn-Fields, has one of the largest Stocks on hand of any Warehouse in the Kingdom, and can afford to supply the public at 1½d. per foot cut to size, fit for any building purpose; the best ever known for greenhouses, &c.; capital thickness. Also a Large Stock of Rough Plate, Coloured, Stained, Figured, Ground, Fluted, &c., equally cheap,—Orders per post shall receive best attention.

GIRDERS.—STRENGTH, LIGHTNESS and ECONOMY are the special merits of HENDERSON'S TENSION GIRDERS, which are applicable to every description of Buildings. In the construction of Subways, Viaducts, and Warehouses, by the use of these Girders a saving of nearly 25 per cent. may be relied upon.—Full particulars and estimates can be had at the offices of Messrs. Pullin & Co. (limited), 8, Gracechurch-street, London. N.B.—Contractors tendering for any works requiring Girders will do well to inspect this patent.

IMPORTANT NOTICE!—A Large Quantity of CONTRACTOR'S SURPLUS PLANT, consisting of Steam and Land Cranes, ditto Travellers, Hoists and Steam Engines, &c., &c., of the most approved construction, and scaffolding of all descriptions, trolleys and rails, &c., to be disposed of.—For particulars apply to Mr. Sutton, St Thomas's Hospital, Stangate.

THE BUILDING NEWS.

LONDON, FRIDAY, DECEMBER 9, 1870.

ITALY AT KENSINGTON.—III.

LINGERING once more among these collections from Italy, they appear to expand and brighten as the eye searches deeper among the gems. The mine is one of jewels, but to value them we must go far beneath the surface. In truth this is the richest cabinet of any. From stately monasteries, from lone oratories, from decaying sacristies and cloisters, examples have been taken, and, if we have patience, we shall find a beauty and a meaning unrecognisable at a superficial glance; the more so since it is perfectly certain that the country which contributes those gems contains endless treasures similarly precious—neglected abbeys upon whose walls glow frescoes that Raffaelle, at his highest point of inspiration, might have drawn; mountain village churches in which hang undescribed pictures worthy of the Vatican or the Louvre. There is scarcely a hamlet or a chapel in the Val d'Arno, from the fastnesses of La Vernia to the Pisan plains, in which may not be recognised some memorial of the fifteenth or sixteenth centuries, like to the chalices and ostensoirs exhibited here, or the Italian medals; or the Oriental agates, stamped into exquisite shapes by the loving Tuscan genius; or, even earlier, the seven-branched Candlestick of Milan—a work never surpassed; or the Triple Portal of Mæstro Mattei. These justify us, indeed, in presenting the South Kensington cabinets illustrating Italy as a commentary, so to speak, especially on the Mediæval period—the noblest period—in Italian art, which has inspired all ages since, and will be the text book of students, so far as we may judge, for all ages to come. It is unfortunate that, except in photographs, we have here no more expressive representation of that noblest ornament of Florence, the Bargello, the Or-San-Michele, the Palazzo Vecchio, the Duomo, or the Baptistery. Models of these would be of inestimable importance to students who cannot afford to travel. But when shall we have such a public body as "The Lords Priors of Arts," who for a hundred and seventy years zealously watched the rising of that structure—alone worth a pilgrimage to see—the Cathedral of Florence? Instead of it we have a First Commissioner, and a Board of Works, eminently respectable of course, yet not exactly resembling the men who drew Giotto from obscurity—him, the afterwards abandoned, whose

name for evermore
Their children's children would in vain adore
With the remorse of ages.

We find ourselves nearer to the purpose of the exhibition when reminded, by copies, of the Italian portraits, in which gold was mixed with colours, and in which linen canvas was used as a novelty. They mark a period in which art was taking one backward and one forward step. In fact, the painter's craft was less conspicuous in this school, though a large epoch, than the moulder's. Those Ghiberti gates, to which we have already alluded, and which Michael Angelo described as worthy of opening or shutting upon the scenes of Paradise (every visitor possessing an earnest sympathy with art will pause not impatiently before them), occupied forty-nine years in completion; but then they were hand chased, there was no bronze casting in those days; and so proud was the Republic of its artist, that having expended nearly half a century's labour upon a single task, he yet found himself a wealthy man. So with the same Lorenzo's baptismal font for the church at Sienna; and so with the beautiful Medici casket. Thus was the artist thought more of than the material. The fifteenth century pax, executed in niello by Finiguerra, was paid for at the rate of three-tenths for the niello, and seven-tenths for the workmanship. A small pane of the painted glass in the Duomo of Arezzo brought the painter fifteen florins, and a fifteenth century florin being worth about £3 English, it may be imagined that such a commission was worth obtaining, when a mighty vault had to be flooded with coloured lights. Still there was more in the Italian mind when it wrought these miracles than the mercenary idea. It felt a mission. There was, even among the dry technicalities of Leonardo da Vinci, who wrote about art as a cook might write about cookery, a genius of thought, notwithstanding his many twists and forced constructions of thought. Yet even he was a pedant, and did injustice to his purpose. Why, amid these exquisite illustrations at Kensington, should we seek for the reason of their being? Is it not enough that they are charming? Are we bound to apologise for the existence of a beautiful woman, or a fragrant flower?

See, and scorn all duller
Tastes;—how heaven loves colour,
How great Nature joys in red and green:
What sweet thoughts she thinks
Of violets and of pinks,
And a thousand flashing hues, made solely to be seen.
How her silver lilies
Chill the sultry showers:
And what a red mouth has the rose, the woman of the flowers.

Well, it is the highest object of art, and the Italians of the golden time felt the truth to incorporate this beauty of nature with the master-works of their own genius. Thus they succeeded. They studied, and they thought out their labours. Not weight, not mass, not finish of execution, could outweigh, in their sight, one grain or fragment of intellect. Three strokes by Raffaelle, in their eyes, were grander than the most elaborate canvas crimsoned and purpled by Dolce. Look even at the copies, and the story tells itself, of truth in tone, colour, and space, and especially of the earth and the open sky, and the reflecting power of water, whether wave or ripple, sunlit or rained upon, shadowed or broken by foam. Now glance at this Canaletti. That master perfectly understood his task. He knew the Venetian lakes; he painted them of an opaque and smooth sea-green, sprinkled with an exact average, in proportion to the extent to be covered, of white concave touches, rather symbolical than representative of ripples; he fixed his gondolas in good perspective; he shortened them, displayed both the beaks, placed the standing figure exactly where it would best break the monotony of perspective, made the canal retire and fade as if geometrically, and still cut his shadows as sharp as sunlight. Compare this with the pond-and-gutter daubs of Pall-Mall—their spray mere smoke, their waves excrescences. Turn from the Pall-mall school to the pure polished velocity of the cataract on Italian canvas, with the foam-globes darting down like white stars, the flash of the water, resembling green fire on the rock, the iris bending over the shattered sunshine of the stream, and space that seems to widen and brighten from one moment to another. So much for the more graceful talents of Italy. And yet all is not said when we turn from the show galleries of the Cardinalate, and the jasper work, and the marble carving, and the picturesque walls, and the cracked panels, to modern Roman and Florentine magnificence, and the corruption of ingenuity by contemporary dealers. We have still left a stone of of beauty, in art and taste, most characteristic of the old Italian culture. In the "Opere Architettoniche di Raffaello Sanzeo," a thorough wealth of this knowledge is found, though still more in the "Monumenti del genio Literario d'Ogni Nazioni." We must, at this point, pause to notice a question of deep interest to England, which the Italians have lately made one of almost national importance. It is that of copyright in art. They, up to within fifteen years ago, followed themselves; and suffered others to follow the maxim *homo homini lupus*. And why? They possessed no centre of literature. They had no learned metropolis. They had no Leipsic, nor even a Dresden. The establishment of copyright in art, besides the obvious effect it must have of encouraging the production and diffusion of the works of genius, must also largely contribute to bring about that literary unity which the most zealous patriots have hitherto vainly endeavoured to promote. It is, indeed, as much a matter of language as of painting. Italy has endured too much from the distinctions between her schools, or, in other words, her provinces. A grand reform, no doubt, has been going on. To bring it about the works of Perticari, Monti, Cesari, and many other philological writers, have, since the beginning of the nineteenth century, mainly contributed, when they hastened the downfall of that old edifice of pedantry by which the Academy Della Crusca had brought the Italian language to a dead stand. Now, this may seem to have very little relation with Italian architecture, yet it is integral in Italian art. Witness those twenty fair folio volumes, fit to be the pride of any people, the "Monumenti del genio Literario d'Ogni Nazioni," and the "Biblioteca Storica." But we pass from them to another cabinet, brilliant with the Italian genius. This is the collection of engravings. It must be viewed in comparison with others, principally the gems and signets of antique times—in cornelian, chalcedony, jacinth, onyx, sard, opal, beryl, and emerald, and even copper-plate, twelve centuries old. We find even Egyptian art-work in glass. The power the ancients possessed of diffusing colour through their glass was very great, but nothing comparable with the Middle-Age Italian. There is a piece of glass, not quite an inch in length and about a third of an inch in breadth, which exhibits on a dark and variegated ground a bird similar to a duck, with plumage of the most bright and variegated colours, formed by the alternate introduction of opaqueness and transparency, a remarkable circumstance being, that on the reverse was exactly the same figure, quite as delicately pencilled. Then we have the Italian cameo and intaglio, both of which are richly illustrated at South Kensington. This is too interesting a topic to be summarily dismissed; but loitering in the Italian Courts, we may as well give it a glance. The process of die engraving assimilates somewhat closely to it, yet holds a lower place. The same kind of tools were employed, however, as upon the cameo and intaglio. The artist having executed the intended figure upon a piece of steel called a punch, this was tempered so as to bring it to a strong degree of hardness, and under it was placed a piece of soft steel called the die, which, being made red hot, received the impression of the image in relief on the punch, by the latter being smartly struck with the hammer, the matrix being thus formed whence proper medallions could be moulded. As to intaglio, the derivation of the term has perplexed many authors. Skinner's suggestion is curious. He derives it from talon, or the claw of a bird of prey, *quia præcipuum istarum avium robur in talo seu calcare constitit*, signifying, although our classic's Latinity is of the most dubious kind, that the derivation of the Italian words intaglio and intagliaro may be derived from the action of the bird's foot clawing the earth, "or scratching, or scraping, or cutting, into any object." We prefer to believe nothing of the sort. Let us leave this for niello, or the practice of filling up the lines of a subject engraved with a metal different from that of the plate. That was a charming art, almost forgotten, or, at least neglected, now. It is as old as Exodus; for of niello was the sacred mercy-seat composed. We had thought to quit Italy at South Kensington this week, but the world widens as you travel; and the vista seems interminable.

THE WINTER EXHIBITION OF THE SOCIETY OF PAINTERS IN WATER-COLOURS.

THE ninth Winter Exhibition of this society—called, we suppose, an exhibition of sketches merely as a *facon de parler*, as not one-tenth of the drawings in the Gallery can lay claim to such an appellation—is now on view. Far be it from us to cavil with such good things as are here presented to us by some of our greatest masters in water-colour; but we would remind them that there is nothing so delightful to a large portion of the public as to see a little beyond the veil—a little into the method of working by which they arrive at their masterpieces. And how can this be better achieved than by a veritable collection of sketches—real sketches—untouched and unworked upon, as they would be allowed to remain in the artist's portfolio in his study, and not finished and stippled up to make them what is called fit for exhibition? After the close of the Loan Collection at the Institution, where we have had an opportunity of closely examining the works of the earlier members of this society, it is curious and interesting to enter the present exhibition and view the pictures of its living members now adorning the walls. By the way, did not the Council of the old Water-Colour commit a mistake in allowing the prestige of such a loan exhibition to be taken from them by a junior society? Be this as it may, the works now on view at the old Water-Colour are most of them no disgrace, and many of them valuable successors to those which, in in earlier times, have been exhibited in this Gallery.

Perhaps one of the most interesting pictures in the Exhibition is that by F. Walker, on the first screen, which he has been either too modest or too forgetful to name. It is probably one of the many picturesque landing-places on the Thames. Its red-brick houses glow in the sunny light of a summer afternoon; a girl in a boat, with a bunch of flowers on her lap, has been ferried across the stream, and the keel of the boat makes nearly the only ripple on the languid waters, reflecting the sandy road of the village street; some people walking on the bank, and some swans revelling in their snowy whiteness, are so arranged as to make up a perfect pastoral of village life, replete with grace and rural beauty. This is certainly a gem of art. The same painter sends three other works: No. 359, "An Amateur;" a perfect bit of autumn colouring, the subject apparently being an old man anxious to make a good choice in cutting himself some vegetables for dinner. No. 385, "Sketch for Illustration to Miss Thackeray's 'Village on the Cliff.'" This is a very highly-finished little picture; all the characteristics in the story are very perfectly rendered, and the difference of nationality in the persons present well preserved. The light coming in at the window, and the cool shade of the room, are well given. And lastly, Mr. Walker sends No. 381, "A Sketch." He is a rising painter, and will make a mark in his generation. No. 24, "Indian Sacred or Brahmin Cow and Calf belonging to the Zoological Society," by Basil Bradley, is not quite so well painted as this artist's other works in the Gallery. The animals are too strikingly white, and want some union with the background. To remedy this white, Mr. Bradley has introduced a black cat, which, being the only dark in the picture, tells as a black spot. Then there is an unpleasant tin pail reflecting the white, which might just as well have been a wooden one. Mr. Bradley sends a most delicious sketch—No. 207, "French Horses;" he gives so exactly in it the shadows of white which are always so difficult to render, and he has caught with a few rapid dashes of the brush the very atmosphere of Paris. No. 225, "Sketch of a French Horse," also white, as are all Mr. Bradley's animals in this exhibition, and No. 267, "Goat and Kid, on the Dorset Coast," a large work, both deserve high praise, and will greatly add to this artist's reputation as a painter. We cannot, however, speak so favourably of No. 294, "My Friend Fox, Pomeranian Dog." The animal itself may be a good portrait, but Mr. Bradley has given it very unpicturesque and commonplace surroundings. No. 41, "The Giant Portal, S. Stephen's, Vienna," by S. Read, is a very clever and interesting work. Nearly the same view was painted by Roberts; neither of these artists seem to us to have been quite successful in rendering the colour of the walls of this cathedral, which is, we believe, built of red sandstone. No. 63, "The Screen, Glasgow Cathedral," and No. 125, "Bolton Stump," both by the same painter, deserve careful attention. Mr. Foster's drawing of "The Greta at Rokeby," a spot dear to all artists, is painted with breadth and power. Mr. Foster seems to us to have changed his style somewhat, and to be aiming at a larger manner in his art. In several of his pictures in this collection he has got rid of that laboured finish and prettiness which have been so painful in many of his works. His "Houses at Eton" is very clever, and has much depth of colour. He sends also two very nice little sketches in one frame, "A Beech Tree" and "A Cottage Door," No. 308, besides other works. No. 50, "The Pilot on the Look Out," is, perhaps, Mr. Marsh's best picture in the exhibition; his colouring is rich and full, but in No. 178, "Jessie," he has painted a fish-woman in a most ungraceful position: granting that it is necessary for a fish-woman to take it, the artist is not forced to paint it. In his picture on the screen, No. 365, "Sea Cave," Mr. Marsh has painted a little girl who has already advanced some way within the cave as if she were in full light. Mr. Smallfield is a large contributor to this exhibition, and his works always repay attention, for he paints with feeling and with confirmed manual skill. Many of his pictures are taken from the Charterhouse, whose present inmates are so soon to forsake its time-honoured walls for what is now considered such an overpowering necessity—country air. No. 56, "Governors' Room in Charterhouse; The Junior Singing Class," is, perhaps, one of the best of the series. The boys, though their backs are turned, are thoroughly characteristic, and the colour is excellent. No. 129, "Chimney-piece in Governors' Room," is clever, and No. 154, "Gown Boys' Dining Hall, looking down Cloisters," is an interesting work. Mr. Smallfield sends also a very pretty little sketch, made for a large picture, already painted, of "S. Francis preaching to the Birds." No. 57, "An Old Dovecote," by the same artist, is a most truthful and loving bit of nature. No. 109, "Trower's Farm, Redhill," by C. Davidson, is brightly painted, as is also 194, "Knole Park, Sevenoaks." No. 103, "At the Foot of the Quantocks," by G. J. Pinwell, is exquisite in feeling. It is highly finished, and the individual character of each face clearly marked out. Perhaps, as a whole, it may be a trifle hot in colour. In the foreground a girl in black, rather a young housekeeper, has just bought some fish of a woman hawking her wares from a neighbouring sea-side town with the help of a donkey cart and a small urchin in a blouse. A little girl is bent upon rescuing an apple which has rolled from the owner's hand under the feet of the patient old donkey. Behind this group rises the old village church (one of those of which Somersetshire may well be proud), lighted by the rosy sunset and away in the distance stretch the grand old Quantocks. It is, perhaps, wrong to criticise a work of so much power, but we think that the fault of the picture is that the relative distances are not quite kept, the church comes a little too forward, and the black of the girl's dress is not sufficiently carried out. No. 272, "Landlord and Servant," is perhaps the finer of Mr. Pinwell's two pictures, and the subject is a most pathetic one. A landlord, of the low builder type, steadily turning his back on the empty desolate hearth, is bullying a poor widow, once handsome, now haggard and worn about her rent, the cheerless aspect of her room, and the miserable appearance of her three half-clad children, betoken at once her poverty and her inability to pay what she owes. The colour and entire rendering of this work are both admirable. No. 122, "Cottage and Barn at Holmbury," Surrey, by G. B. Boyce, is dreamy and delicious in tone. This artist always repays study; he sees nature in an original way, and paints with an ability and power seldom reached. His particular method of laying on the colour should be observed. Many of his works in this gallery are very excellent specimens of his style. No. 300, "Farmhouse at South Stoke, Oxfordshire," and No. 376, "Near Dorchester, October Evening" are perhaps his best. He sends also two excellent sketches, No. 233, of an old fortified house in Northumberland, painted on coloured paper. This artist's choice of subjects is certainly very peculiar, and perhaps his one failing. Why choose such poor scenes as No. 374, "Outside Cairo," and No. 338, "The Roman Dyke at Dorchester"? His power of painting overcomes the poverty of the subject, but then why start with such a bad subject? No. 227, "The Nun—St. Peter's, Rome," by Walter Goodall, is perhaps this artist's best work. In No. 12, "A Study, Rome," the head of the man is much too small. No. 325, "By the River," by J. D. Watson, is very clever and has a good tone of colour; it is painted with much power. No. 344, "The Window," also deserves attention. Perhaps Mr. Watson's most attractive work is No. 312, "The Fisherman's Darling," the figure of the little girl wading out into the water to meet her father is charming. No. 241, "Olympia," is the best of the three chalk drawings of rather colossal women sent to this exhibition by Mr. F. Shields, and a clever work. The face is grand in expression, but the neck is badly drawn, and mars the whole effect. No. 186, "A Council of Officers," by J. Gilbert, is painted with splash and vigour. The sky is much wanted, as the white paper left is staring. The costume and armour are rather ill-assorted, being taken from different periods. No. 382, "The Rear-Guard with the Baggage," is full of life and animation; and the colour, though a trifle black, is, on the whole, pleasing. In No. 40, Mr. Gilbert has certainly succeeded in giving to the sleepless Henry IV. an expression of great misery. In 75, "Sketch for picture of Glasgerion," by T. R. Lamont, is happily composed, and the firelight well painted. The lover, having lulled the company to sleep by his music, is enjoying a few minutes of bliss with his fair princess. In No. 83, "Hawking," the lady's figure comes before that of the cavalier in front of her, who should not have had on a black hat. No. 259, "The Sisters," by the same artist, is clever. The white drapery of the elder sister is well arranged, and the background is picturesque and nicely painted. No. 44, "Under the Rialto, Venice," by W. W. Deane, is a work of some merit; but the painter has failed to realize the sharp clearness of the light in sunny Italy. No. 174, "Study on the Lyn," by G. Dodgson, is broadly painted, and rich and good in effect. No. 192, "Sunset in Sussex," by H. Brittan Willis, is, perhaps, this artist's best work here. It is highly finished, without being sleepy. In No. 118, "Idle Moments," by E. K. Johnson, the colour of the blue dress is very crude and unpleasant; and there is a disagreeable fashionable air in the figure in a blue gown in No. 130, "A Captive," by the same artist, which shocks our taste. On the other hand, the woman in No. 149, "Old Letters," Mr. Johnson's best picture, is graceful and charming, and there is nice feeling displayed throughout the picture. No. 156, "The Stolen Kiss," by E. Lundgren, is a commonplace rendering of an eastern subject, and unworthy of this painter's brush.

We expect better things from him. No. 337, "Gone Away," by F. Taylor, is perhaps one of the best of the President's works in the present exhibition. In No. 286, "Monks at their Devotion," is a happy specimen of Mr. Carl Haag's powers. Mr. Nash sends several drawings, marked by his usual ability. Perhaps the best is No. 7, "Room in the Gate House, Kenilworth." In No. 189, "The Abbey of S. Roguier, Abbeville," by J. Burgess, the coloured paper gives the effect of its not being daylight, and mars a careful drawing. Space fails us to notice all the good pictures. We can only beg our readers to remark besides those we have already mentioned, No. 161, "Off the Great Ormes Head," by J. W. Whittaker; No. 151, "The Poacher's Victim," by A. P. Newton; No. 160, "Carrick Castle," by Francis Powell; No. 316, "Eel Pots," by Birket Foster; No. 349, "Cutting Coarse Grass, Guernsey," by P. T. Naftel; and 369, "A Group of Cattle," by H. B. Willis.

◆

BONA-FIDE ARCHITECTURE, THE ROYAL ACADEMY, AND THE INSTITUTE.

IT is very difficult indeed to determine, in the present state of transition in art, how to indicate the best way, or indeed any way, to a brighter and fairer future. If the problem were to be put to the wisest what to do first, supposing he had full power to carry out any system of work, it would without doubt sorely puzzle him to point out a way or even to mentally devise one. No wonder, then, that more simple people should fail to solve the problem, or to guide to a better state of things, or even to indicate the road likely to lead to it. All this is painfully apparent in the two lectures or addresses just delivered, one by Mr. T. H. Wyatt, the President at the Institute, and the other by the President of the Architectural Association. We do not now intend to go into all the detailed matter touched upon in those two addresses, but propose only to say a few words on a subject which neither of the addresses even so much as hinted at, though it is and always has been to our minds the chiefest thing of all, and worth all other influences put together, whether educational or otherwise, in the future of art. It is that of the providing and sustaining some means or institution that shall enable the student of art or architecture and the humble practitioner to exhibit to the public his bona-fide work, and thus to evidence publicly his artistic power. It is not a little singular, all things considered, that this all important subject was not touched on, mention having been made of almost every institution devoting itself to art and artists. A few words, therefore, may help to call attention to it, and perhaps may aid in showing how great a mistake it is to neglect it where so much is done in other ways.

But first we would remark on the strange activity displayed by the Royal Academy, and on the direction that activity has taken. Sir Charles Eastlake, Mr. Wyatt tells us, said that "no pursuit connected with the objects of taste can be more fitly recommended as an adjunct to a liberal education than a correct knowledge of architecture, and a power of forming a sound judgment on the works of the architect;" and the Academy have at last, after a hundred years of experience, come to the conclusion that an architectural class or department within the boundaries of the Academy is a desirable thing and likely to help forward the wishes of their late accomplished President. For this purpose a distinct class is to be formed for the purpose, broadly, of "teaching,"—if that be the word,—*teaching* "architecture." What it is precisely to do probably no one exactly knows, but Mr. Wyatt says that "printed regulations and instructions" will shortly be issued, so that we must now soon know what it is that is really and practically and in detail meant, and how far it is to resemble or to differ from the lectures and instructions at the London University and King's College; but of the general and main idea there can of course be no doubt. It is to teach "architecture" to those who desire to learn it.

It would be not a little curious, if it were possible, to bring up out of the grave some one of the men who in old times did the work of the world's architecture, and to put him in such a class as this proposed one, and at the end of a "term" to make him go through the same examination that the members of it are destined to undergo, and to make him answer the same questions—dates, names, hard words, new contrivances, patented inventions, æsthetics, laws of proportion, and the whole of the rest of the long list of accomplishments which would quite fill this page, for of this work there is no end when you once fairly begin it. But alas for this experiment! The very first question would be enough; he would never get over it. If the man who drew the section of one bay of Westminster or Chartres, which would be the architectural and fine art key to the building, were asked what he thought of the "laws of proportion" as exemplified in the Parthenon or the Roman Jupiter Stator, he must surely have been fairly at a loss what to say. Lacking words we may suppose him to point to his "section" of a cathedral, and finding words at last, to say, "This is my notion of proportion; I know nothing of proportion in the abstract, still less of principles of proportion." Again, how surprised would the advanced class, and the certificated teacher of it be at his drawing, so rough and merely practical, perhaps to an inconveniently large scale, and on an oak plank, with all done in thick rugged lines like those one sees in a carpenter's shop, where the real drawings are made which guide the actual workman. What would become of this awkward and misplaced individual when so brought face to face with his modern *confreres* we do not pretend to say, but that he would be out of the "prize list" is quite certain. What a contrast there is between the Dark-Age system of doing things architectural, and our own more improved plans and methods of work.

But among all these hosts of schools, institutes, academies, and means of becoming acquainted with architecture and art, there is, as we have hinted, yet one other, which, more than all, is to our minds chief and paramount. It is that of the Architectural Room at the Royal Academy. Let us confine ourselves for the present to architecture and architectural students, and the more humble practitioners. Be it observed in passing, and it should never be forgotten, that before this present generation of students no such means as now obtain had any existence. All our present race of senior practising architects, as Mr. Wyatt himself, Scott, Pennethorne, Donaldson, and indeed the whole senior body of the Institute, had nothing more to help them in their "learning of architecture" than the special offices in which they were severally brought up. Nothing existed but the Schools—the Antique School, be it noticed, not an architectural school of the Royal Academy. So few of this number ever entered the schools of the Academy that broadly we may fairly say that none of our present race of eminent architects had any other advantage or means of progress or knowledge but that which they could get out of the "office" in which they were brought up, and from the master under whom and for whom they worked. This is a very surprising thing to take into consideration, so much so, indeed, that all else fades into absolute nothing by the side of it. Why, Mr. Scott, with "fourteen English cathedrals and three Welsh cathedrals," was never a student of the Academy, and had no more education architectural than he could get from the master under whom he was brought up. This is truly wonderful. No one disputes that all this host of cathedrals are in course, under him, of "restoration," and that in a (according to book) satisfactory and truly Mediæval and Gothic fashion and spirit and workmanship. It would be marvellous indeed, says the President of the Institute, if with such a list of works requiring deep thought and study, the world was unanimous in approval of all that had been done. Indeed it would, but it is surely a thousand times more marvellous that any one should be able to do such things without any of those advanced and progressive and learned systems of art and architectural education which are now organised or about to be organised, and without which, as we are constantly told, no architect can be competent to his work; and without going through which it has been seriously proposed that no man shall even so much as enter the Royal Institute of British Architects at all! Wonders surely will never cease.

Now, our firm conviction is simply this: that if a youth or man cannot, as an apprentice, or drudging clerk, learn his business, say of architecture, in the office of his master, he is unfit by nature, in some way or other, for that special business; and, moreover, that there is no phase of it which he cannot and ought not to acquire in the office, or whatever else it may be, in which he is brought up; and that all else out of this is merely accomplishment and mental luxury, so to phrase it. All the really useful and practical work is to be acquired, or ought to be acquired, in the office or on the works, and not in fanciful schools or from out-of-the-way lectures and learned speculations. All these may be curious and interesting enough, and it may be better to go to such of an evening than to places of mere amusement, but they are no more than this. But that which is really and so much needed—and it is surprising that neither Mr. Wyatt at the Institute, nor the President at the Architectural Association, noticed it—is, as we said, some extension of the Architectural Exhibition department of the Royal Academy. We say the Royal Academy, because it is quite certain that no mere architectural exhibition can well succeed as a public exhibition. All know that it has been tried, and has, unfortunately, failed; and the reason is obvious Architecture, even as an exhibition of architectural coloured perspective drawings, is o too technical and dry a character to be appreciated by any but those practically engaged in it. To the ordinary public a "section" of a church or a house is simply unintelligible; they do not and cannot tell what it means, and the plan even of Westminster Abbey or the Parthenon are mere puzzles on paper—nothing can be made out of them. An "elevation," though a street elevation, is but little better; and "perspectives," though, of course, more readily understood, are, as water-colour drawings—and as such they are looked at by the general public—little better than conventional daubs; nature and art alike are well nigh eliminated from them; what there is of nature in such performances is hidden by the monster building, and what there is of architecture is hidden under painted trees and ground. It is truly a very difficult problem, and the only way out of the difficulty is through the Academy. In this institution alone can there be any hope for the future in this awkward state of things. The public, the general art-interested public, go to the Royal Academy Exhibition in crowds, as everybody well knows, to look at the pictures or oil paintings; and when there they will to a certain extent wander into a room filled with architectural drawings, and will be to a certain extent interested in them, and may be supposed to become more and more interested in them as they increase in artistic and individualised merit. What the student of architecture and the small beginner and practitioner now want of the Royal Academy is an extension of the means of exhibiting their works, so that at least their friends and acquaintances may see them, and so that their individual power as artists, whatever that may be, may be evident to all who care about it. Nothing can be more dismal than the prospect of the real artist is at present, for unless he be of a certain social standing, there is in solemn truth no hope for him. Of what earthly use is all the architectural and professional education and accomplishment in the world if no one but the artist himself ever sees the result of it? Drawings, if ever so good and able, are no use shut up in portfolios! It is in the public exhibition of his work that the true life of the artist is to be found, and not in "voluntary obscurity," as Ruskin has so foolishly contended. Half the power of artistic strength consists in the power which the artist acquires by the thought of what the world thinks of his work, and of its relative merits compared with that of those who work with him, and in the same age with himself. It is not, therefore, by the establishment of new schools of art and architecture that the youthful artist or architect is to be helped on his way, but by the extension of the means of publicly exhibiting his work—his *bona-fide* work, be it observed—to the public, and by thus enabling him to see what others can do, how much better, or how much worse, or how differently.

And here we cannot help noticing how very interesting a room in the Royal Academy there might be by the exhibition of *bona fide* architectural drawings only; we repeat the word *only*. No one will dispute the fact that hitherto the architectural room has been filled with manufactured drawings, perspectives, plans, sections, and even some details, and that there never has been an architectural exhibition in the same sense that there has been an exhibition of cabinet pictures. No one, we say, will dispute this for a moment. Architecture, dry and technical as it is, and consequently to the general public uninteresting, would perhaps become of interest and worth the looking at if made up solely of *bona fide* works of artistic handwriting, and personal and individualised work. Art manufacture, whether of architecture or crockery, can never be of any real and lasting interest, whether on paper or in material; it is only when the mind and hand of the artist himself go together that real artistic power can manifest itself and real art be produced. It is for the Royal Academy to encourage this by the simple and inexpensive plan of opening one of its rooms to the architectural student, and to the humble practitioner, and to those who are compelled to work out their own ideas, whatever they may be, and who cannot afford, or who will not pay others for the execution of the work which they exhibit. We would even go a step further than this, and affirm that some interest would be felt by the public at large in the sight of such drawings as that we have indicated as the production of the architect of Westminster or its chapter-house, or Chartres or its doorway, the men's own work on a wooden plank! C. B. A.

ON THE HISTORICAL DEVELOPMENT OF ORNAMENTAL ART.

DR. ZERFFI delivered his ninth lecture on this subject in the Lecture Theatre of the South Kensington Museum on Tuesday afternoon last. In commencing, the lecturer said that we should be able to trace a common mode of thinking amongst the nations of Aryan race all over the world. Whether we met with them in the snowy and icy regions of the North of Europe, settled on the terraces of the Scandinavian mountains, on the plains of Brazil, behind the Himalayas, or on the shores of the Indus and Ganges, we should find analogies in their languages, their myths, their philosophical and theological systems, and in their architecture and ornamentation. When we read of Indra (the sun) fighting with Vritra (the Dark Power), or with Ahi (the snake), we had the essence of the struggle between Ormuzd and Ahriman, between Osiris and the Typhon, between Phoibus Apollon and the Python, or between good and evil, clearly before us. We should find connecting links in all the myths, whether sacred or profane, of the Old World nations. These connections would especially become apparent to us when we compared the art productions of the Aryan race one with another. We were struck by the presence of totally different motives in the works of that race, and we should have to seek for an explanation of this phenomenon by considering the influences of climate and social organization. The Aryans must be studied (1) geographically, (2) from a religious and social point of view, and (3) archæologically. The passages in ancient authors treating of India referred only to the North-Western portion of that vast continent. The South-Eastern part had only become thoroughly known in modern times. We had been made so well acquainted with the myths, philosophies, poetry, and customs of the Aryan nations that we might understand their complicated productions in textile, tektonic, and architectural art. Just as their mythology, which at first had been nothing but a simple Nature-worship, became transformed into impersonations of the workings of the physical forces of Nature, so also had their art gone through all the metamorphoses of pliable, plastic, elastic, and solid substances. Their unbounded imagination had led them to use combinations of the elements characteristic of the four branches of ornamental art. Thus their wall decorations resembled shawls, their rock-hewn temples appeared to be constructed with wooden rafters, and their stone sculptures seemed to be fashioned in terra cotta or plaster. On this account, though their great architectural remains did not date many hundred years beyond the Christian era, we were compelled to assume that their forms, especially in ornamentation, belonged to a degenerate period. Their art thousands of years ago had been simple; had then reached majestic beauty; and, finally, had fallen into the state in which we found it. Overcrowded forms had been produced, as in the mixed style, which borrowed its motives from wood constructions, used baked bricks, stone squares, metals, precious stones, and (very largely) stucco. In the oldest Stupas we found constructions of a combination of brickwork and stones. Side by side with these, immense grottoes and monoliths existed in regions which had been described as mere deserts. The oldest rock-hewn temples dated from the third century B. C. The theory that Indian architecture had developed itself from those temples was as untenable as the assertion that Byzantine architecture originated from the many caves in which the anchorites of early Christianity lived. In both cases history taught us that whilst fanatics retired into dark caverns, the piety of others found expression in highly adorned constructions. We might, therefore, positively affirm that whilst ascetic Buddhists were constructing the marvellous rock-hewn temples, the Brahmans had their palaces, their monoliths, and a highly ornamental art. As with the Greeks, sculpture appeared to have been the final result of other branches of art with the Indians. Referring to a photograph of the casts of the eastern gateway of the great Tope at Sanchi (now placed in the new Extension Court of the South Kensington Museum), the lecturer said that in merely superficially glancing at these casts, which had been taken with the greatest care and accuracy under the supervision of Lieutenant Cole, we should at once be struck by the presence of forms belonging entirely to wood construction. We should see that the carving was that of wood and ivory. The richness and variety of the patterns, and the minuteness of detail, proved that the primitive motives of this kind of ornamentation had been originally executed in wood, then, by degrees. in stucco, and finally, when certain forms had become fixed, in stone. In the casts referred to, the arabesques, which were executed with great minuteness, demanded especial attention. These also, as well as the sculptures of human and animal figures, certainly look very much as if taken from patterns carved in wood, or from models executed in clay. The monolith pagodas, with their terrace-like elevations, the pillars and pilasters, and the forms of the roofs generally, all pointed to this origin. These instances went far to prove that the theory that stone-sculpture had been the beginning of Indian art was a mere hypothesis, and was in direct opposition to the very patterns of Indian sculpture. The substance that served as a means of transition from wood-carving to stone construction must have been stucco. In the old writings of the Indians, more especially in the Ramâyâna, there were passages that proved this. Further, in the Sakuntalâ, by Kalidasas, we found the following:—"Over the gate rises an arch of ivory; above float flags of a deep yellow hue. The panels of the door are of gold and stucco, glittering like the diamond-breast of a god. Look here, there is a row of palaces, shining like the moon, like shells, like the stem of a water-lily. The stucco is laid on as thick as a hand." This passage can only convey the idea that the stucco was worked in relief, as otherwise the expression would be unmeaning. It was therefore a fact that the richest forms of ornamentation in stucco, with mosaic and other patterns richly painted, existed. It required no great stretch of imagination to assume that, as with the Assyrians, Chaldæans, and Persians textile art preceded stucco, so also with the Indians stucco was the forerunner of stone sculpture. Dr. Zerffi then proceeded to give a detailed description of Indian constructions and their ornamentation, and concluded by remarking that no race but the Aryan was capable of observing Nature with a really keen understanding, and finding in it motives and types, incarnations and forms, of the deepest religious mysteries. Tree-worship took herein its origin. The conception that God was everything, that in Him was everything, that the world was without and still within Him, that all beings took their origin in Him and returned to Him, that thus an everlasting emanation and absorption was going on, was typified to the Indian mind by the fig-tree (*Ficus Indica*). This tree, the lotus flower, and the serpent (the symbol either of evil or eternity) were everywhere found in Indian art. The indian fig-tree took root, so to speak, in the air, grew downwards, and grasped the earth with its branches; then again taking root it repeated this process. This tree was the sacred tree, the tree of life, a symbol of the incarnation of God's spirit in eternity. We should see first Egyptian, then Greek art developing from Indian architecture and art, just as we should see Gothic art yield to the more refined modern art. In Indian ornamentation splendid specimens of an exquisitely delicate taste were to be observed, but their life under the pressure of their climate was a dream. Dreams were bad subjects both for scientific men and artists. Art, as well as science, required life, action, change. It should rest on the firm basis of symmetrical laws, and should never lose itself in the incomprehensible.

ARCHITECTURAL ASSOCIATION.

AT the usual fortnightly meeting, held on Friday evening last, Mr. T. H. Watson, A.R.I.B.A., the president, occupied the chair. The minutes of the previous meeting having been read and confirmed, the following gentlemen were elected as members:—Messrs. W. H. Nunn, W. J. Ebbets, J. E. J. Mann, A. A. Hudson, J. Richardson, E. J. May, M. N. Ellerton, W. J. Cudworth, F. W. Barrett, P. M. Cumming, and W. H. Wood. Mr. Quilter then drew attention to a letter which had been received from a San Francisco architect who required a pupil. He was willing to give a salary of £4 or £5 per week to a really first-rate man. The letter was brought before the members in order that, if any of them were so minded, they might try for the berth. The librarian then announced several donations to the library, including several volumes presented by Mr. J. H. Parker, completing for the library the list of architectural works published by the Messrs. Parker. A special vote of thanks was unanimously tendered to Mr. Parker.

Mr. J. W. Rhodes then read a paper

ON THE NINETEENTH CENTURY.

The object of the author of this essay was to vindicate, in some measure, this nineteenth century. On every side the present was depreciated, and we everywhere heard it said that there never was an age so badly off in architectural matters; that architecture was finished; that we had nothing to do but to copy; that we were the most inartistic race that ever lived; that everything nineteenth century was bad; that self was all in all. To such detractors of the present age Mr. Rhodes invited comparison between the world of to-day with the world as it was under Egyptian, Greek, Roman, Indian, or Mediæval sway; and it would be at once seen what a grander world we lived in. London, with its art, science, and commerce, and its 3,000,000 of inhabitants; our giant manufactories, turning out their products to supply the mighty aggregations of humanity in our large towns and cities; the steam engine, with its great power and facility of management; the locomotive, carrying its loads of humanity and merchandise with whirlwind speed along fertile valleys and over great mountains, by such stupendous erections as only Titans could build; the number of such works, and their extent, and the comparatively few years in which they had been erected; the steam ship, independent of wind and tide; the telegraph; the giant influence of the press; our wonderful and humane system of lifeboats and life-saving apparatus; the general level of education, although so low, yet so much better than in past ages; the great luminaries of the age in science, art, and literature—all these things showed that the world had advanced, and not retrograded. Coming to the architecture of the nineteenth century, Mr. Rhodes said that an examination of it would show that that much abused art was capable of doing some good work; and that in some buildings, particularly in churches, there was a true architectural spirit pervading the whole structure, showing that they were not literal copies of old work. The best of such buildings fulfilled the requirements of the age; were built with the ordinary materials; had the necessary conveniences for modern requirements, and showed the advance of humanity by the use of modern inventions and improvements. An immense amount of good, well-thought-out building is done in the present day, and many of our erections are quite as good, at any rate as far as the use of material and construction are concerned, as the old ones; and in good modern buildings by our best architects, the principles are quite as sound as those in the old ones. Mr. Rhodes then went on to say that although he was crying down the depreciation of the present age, he by no means would sit down and say we could not improve. If the matter was taken up in the true architectural spirit of the present day, it would be found that our natural, or rather artificial, way was to see what had been done before, to judge from that whether or not it had led to good or evil results. Our immediate predecessors simply tried to produce an architecture equal to their model, whether it was Mediæval or Greek. They never even so much as hinted that they hoped to surpass it. Now our aim can never be too high, so let us endeavour to surpass all that has gone before. Mr. Fergusson states it as his opinion that the Classic and Mediæval architectures grew to seed. All would agree with this, but there was a most decided difference in this point between the Classic and Mediæval styles—*i.e.*, the Classic seemed to run to seed, or into the very debased Roman, and was buried in years of neglect, and sprouted out a young and vigorous style. But, alas! the Gothic is still buried, with the weight of the Renaissance and the Greek and Mediæval revivals piled high above its tomb, where, let us trust, it may remain, and not trouble us with another fresh start. This being the case, how absurd to act as we do. Instead of following and cultivating nature, and acting naturally, we defy nature and attempt to set aside her laws. Greek art or architecture grew to the perfection of maturity and glory of the Parthenon, and declined with the decrepitude of old age. The Romans (stern, matter-of-fact men, much like the modern Englishman, with great constructive skill), coming after the Greeks, did wonders as long as they used their common-sense; but the instant they bowed their necks to the superior Greek, how servile they became, and how great was their failure! The Romans failed because they constantly turned back to their first starting point; they invariably looked back to the Greeks as we looked back to the Middle Ages, instead of simply looking back to yesterday's work and improving on that. Then the Romanesque builders entered the architectural arena. Did they copy, idolise, measure up, and cherish Greek art, which was undoubtedly better than their own? No, they built on common-sense principles, preserving the traditions of their forefathers; they did not write elaborate treatises or make delicate boundaries; their boundaries were the materials at command, and their laws were Nature's. By pursuing their own course, and departing from the principles of Greek architecture, they arrived at perfection in another form. So it was with the Mediæval builders. They preserved, but continued, so to say, the thread of the story, writing the history of the world in stone, and telling the grand truths of Christianity in imperishable words. Now if we of the present day (who may be compared to the Romans, and the Mediævalists to the Greek builders), instead of copying, simply study, all will be well; if we look back we shall see what grave errors have been made, and we are simply drifting towards another. Did not the Roman study Greek, and fail? Did not the Greek Revivalists study the works of antiquity, and did not their era fall to the ground? Had not the last generation taken up Perpendicular and Decorated in turn, and failed? And were not we taking up Early English and Early French, and should not we fail? Judging from the past, a revival or renaissance, or a break in any way of the course of architecture, is its sure and certain ruin; the only real and proper course is to take that which is at hand, and let each succeeding generation add its experience and thought, which, although a slow, is a certain process, and must finally lead to the desired result. Some of the great architects of our day have succeeded in erecting buildings of which we may justly feel proud, and by which the student of architecture may profit. If we are to follow the example of the good men of old who developed the Romanesque and Gothic architecture from the debased Roman, and if we are to avoid the mistakes of the Romans, we must study the works of our day. It was too much the fashion to condemn all modern work, simply because it was modern; and while this spirit prevailed no progress in architecture would be made. The old men studied the work of yesterday; they sketched the last new building, and made a note of each new bit of detail: each added his mite; each contributed his knowledge to the whole; each thought his work better than his father's; each loved his work, believed in it, and thought it the best in the world. Not that the essayist wished the architectural student to ignore the accumulated knowledge of his ancestors; but let him continue the story—not too anxious, but working earnestly, steadily, and with a fixed purpose; with true principles, integrity, manly determination, and self-reliance; a good knowledge of existing and past styles (especially existing ones), and a thorough scientific and constructive knowledge for his stock-in-trade. It seemed a great disgrace that architects of the present day should sit down and confess themselves beaten by the architects of former ages, considering all the opportunities, the improved materials, and the better appliances, and the science and intellect now prevalent. The fact was, there was too much despondency in the profession. Architects only wanted common sense, and an artistic mind, with a determination to work on true principles while throwing off all shackles of precedent, and they need not kneel at the feet of either Goth or Greek. We were better builders than our ancestors, and better constructors in every way, and individuals were quite as artistic and much better trained. The author deprecated the idea that an architect should be required to be a walking *Encyclopœdia Britannica*—a perfect artist, linguist, archæologist, ecclesiologist, naturalist, geologist, mineralogist, chemist, engineer, and philosopher—on the ground that a Jack-of-all-trades was generally found to be master of none, and that the man who was his own lawyer had a fool for his client. A man should not be his own doctor, and if an architect wanted information as regards his materials let him pay a scientific man to tell him. More concentration, more exclusiveness, was required. The architect should be a perfect builder first, and should learn the art of architecture afterwards. Mr. Rhodes then proceeded to ridicule the flimsy pretexts raised by servile mediævalists against the employment of new materials and appliances, such as plate-glass, cast-iron, the guillotine sash, framing, and Portland cement used externally. It was said "The old men never used plate-glass, and therefore we must not!" They never used it because they had not the opportunity—because they could not make it—because their wants never required it. Architects should not be afraid of their material; they should be master of it, or it would master them. Cast-iron a modern mediæval architect could no more think of using than a Composite column. "Such cheap stuff as cast-iron! Bless your life, it would positively ruin my building! I would not use it on any account." Was not cast-iron a very useful building material, and much more durable than wrought-iron for external work? And it must be made artistic; it would simply show the power of the architect to make such a material artistic and beautiful. Similarly weak objections to the other materials named were answered by Mr. Rhodes. Everything machine-made, and consequently cheap, was condemned as "bad art." Mr. Rhodes said his impression was that art was the power of making useful things beautiful, and so long as this was accomplished honestly what more was wanting? Machinery did this to perfection, and yet it was decried and looked on with horror. In conclusion Mr. Rhodes said: Do glory in our superiority; do love your times! Do impress the times on your architecture, and do not attempt to stem the tide of human progress. But do not drop listlessly down with the current; pull with the tide, with a clear look-out and a determination to go straight to the goal. Remember that "Progress" is the word; "Onward, Onward" is the world's motto; "Backward" is the architect's! Shall the Iron Age be stayed in its whirlwind career by the puny, miserable, pedantic, divided army of architects who profess to lead? Lead away, but few will follow, and properly so too! You wish to lead to lies, shams, deceits, greater than any the world has yet seen . . . The age is essentially common-sense, and the architecture should be likewise. The age is great, mechanical, scientific, and refined, and the architecture should be the reflection of its time, and should and will be like the times as long as we do not strain after and try to introduce a false art.

Mr. J. SLATER, B.A., then read the essay which gained the prize annually offered by the Association. The essay is on

THE CAUSES THAT INFLUENCED THE DEVELOPMENT OF MEDIÆVAL ARCHITECTURE.

While Europe (said Mr. Slater, after some introductory remarks) during the sixth and two following centuries was emerging very slowly and very painfully from the worse than chaos into which it had been plunged, first by the dismemberment of the Roman Empire by the Goths, and then, after they had fallen through sensuality and intemperance in every sense of the word from their original high estate, by their overthrow in turn by the Franks and Lombards, the populace had literally no time and no energy for anything but gaining a bare livelihood, and consequently the poorest and vilest buildings sufficed for domestic dwellings, which were almost the only edifices reared. The buildings the Romans had left behind them were in ruins for the most part, and owing to the barbarian storms which had swept over the country, it was the exception for any one to understand even what had been the uses of them. Still, some structures remained to serve as models, and the few edifices reared during this period are simply very poor imitations of Roman buildings. War, bloodshed, and rapine, with famine stalking after them, had stunted the growth—nay, had well-nigh eradicated the natural inventive faculty of the Western nations, and it is not till we come to Charlemagne that we find any signs of a re-birth or renaissance in its true sense; for although the Lombards noticed and deplored the increasing decay of art, and encouraged the progress of architecture by all the means in their power, they were quite unable to effect any radical improvement. These remarks, however, will not apply to the extreme East of Europe, where the Roman empire still faintly preserved the shadow of its pristine power, and where, about the fifth century, Byzantine architecture had its rise, which exercised a very marked influence over much of the architecture of the West. Charlemagne, by his genius for consolidation, and by his earnest desire to bring his subjects into communication with other peoples, and to make them acquainted with other branches of learning and industry than those few which they already had some knowledge of, and especially through his commercial spirit, woke up into life the slumbering germs of Western energy. M. Viollet le Duc says that Charlemagne introduced modern arts into France, and this practically means into Western Europe. He was an undoubted patron of architecture, as is proved by the fact that he gave a certain tone and character to the architecture of the whole of the district from the Rhine to the Pyrenees, and although much of what he effected passed away after his death, still his influence was so great and extensive as to remain perceptible in certain localities for three or four centuries. Architecture, however, is so much the outcome of the special thoughts, manners, and habits of a nation and of an age, that it is impossible for any one man, however great, to have more than a partial and temporary influence upon it, unless he tyrannises over art and stamps a certain mark—his own image and superscription—upon it. This is what a great ruler like Charlemagne would be too likely to attempt, and, in fact, what he did, for he caused the same kind of building to be erected throughout the entire extent of his dominions, totally disregarding the varied nationalities existing therein, and had his successors—sovereigns as they were over both church and state—possessed his power and vigour, they must have inevitably curbed, and therefore injured architecture, which is in its very nature fetterless and free. Hence we must rejoice that the power of the emperors began gradually to wane before that of the church, which was thus enabled to use in a manner so beneficial to art the power and influence from which such mighty results have flowed, for there can be no doubt that it is to the wide-spreading resources of the Church of Rome we owe some—nay, most—of the noblest specimens of Mediæval architecture, which, without her aid, would never have been erected.

(*To be concluded next week.*)

◆

NEW TOWER, CARDIFF CASTLE.

OUR plate this week represents a new tower, just being erected at the south-east corner of the curtain wall at Cardiff Castle, the seat of the Marquis of Bute. It may be noted that the tower will be the most prominent object to the eye of the visitor as he enters the town at this point. The tower is connected with the castle by means of a covered way, which is formed on the top of the curtain wall, the latter being pierced with embrasures and loopholes on the outside, while on the inside it is open to the castle yard. The dimensions of the tower are as follows: Height from ground to underside of machicolation, 79ft. 9in.; from ground to top of finial, 132ft. The tower is a square on plan 25ft. outside, the walls being 5ft. thick, thus allowing deep window recesses in the rooms. Internally the tower is divided into stages, commencing from the bottom thus: Gardener's sitting-room, gardener's bed-room, (these two rooms have no communication with the others), winter smoking-room, entered from covered way on wall, bed-room, clock-room, servants'-room, summer smoking-room, with gallery at upper part. The whole are intended to be finished in the most complete manner, internally with painting, decoration, and sculpture, while on the outside also will be placed figures of the planets, standing on corbels carved with the signs of the zodiac. The whole tower is being executed in the very best of material, by Lord Bute's own workmen, from the designs and under the superintendence of Mr. W. Burges, architect. The stone is frem Lord Bute's own quarry at Caerphilly.

◆

NEW ELEMENTS OF HAND-RAILING.*

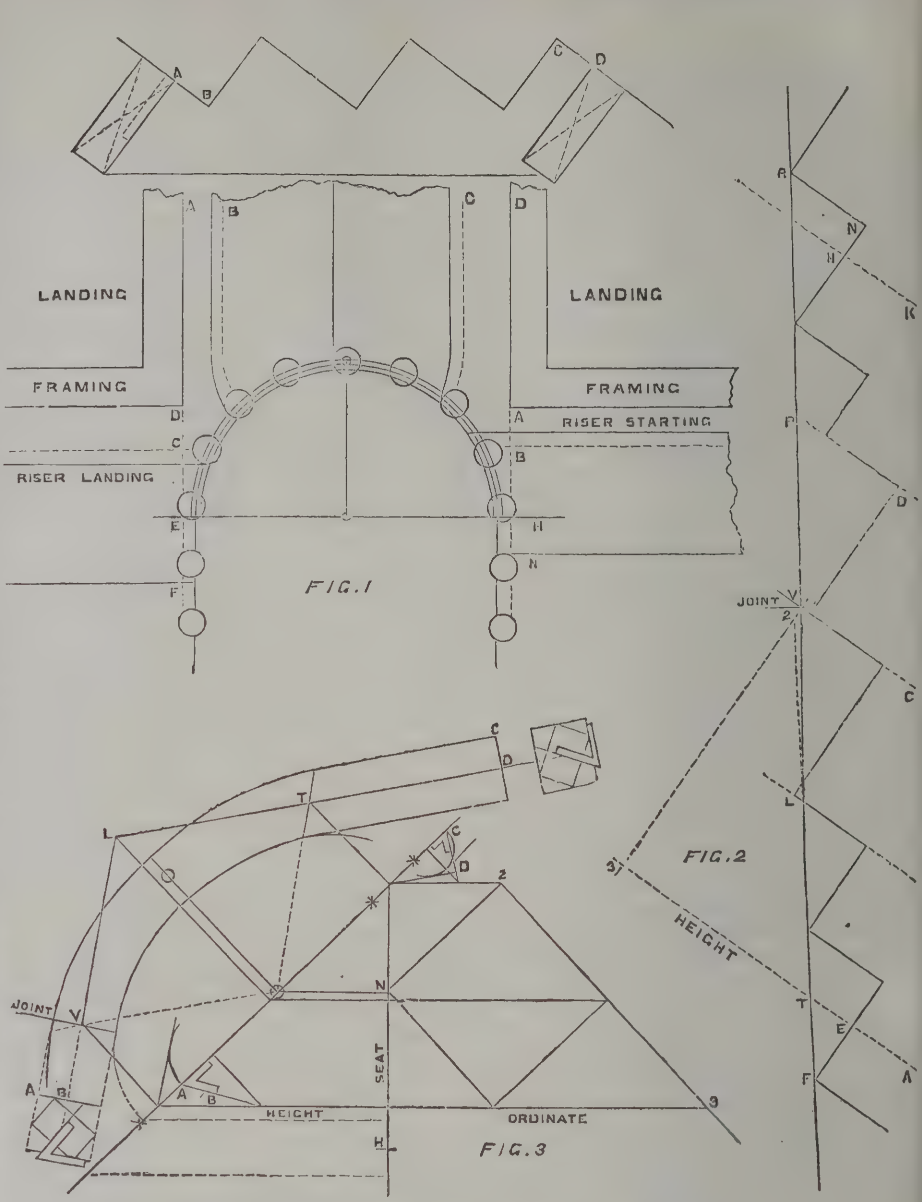
(*Continued from page* 410.)

PLATE 12.—CONSTRUCTION OF STAIRS HAVING TWO QUARTER LANDINGS, THE CYLINDER TWENTY-FOUR INCHES.

FIG. 1. This plan is adopted when space is limited to a certain number of steps from starting to a landing; the width, however, being sufficient to have steps of proper length, and also allow of a large cylinder and two quarter landings. The cylinder and thickness of bracket being drawn, set off from bracket half depth of dovetail on the step. Then draw centre line of rail. This done, let centre of baluster stand on line O O. Set off on each side of it the position of others. Leave the spaces between equal to half a step. Now determine on which side the rail is going up stairs, say the right. Then draw face of riser on left of baluster O. This done, set off width of steps in cylinder. Curve the ends, as shown.

Next, draw face of risers F and N. Set off width of steps. Then draw riser landing and starting. This shows that one baluster stands on each landing, and two on a step, which is the best arrangement can be made for this plan, and far better than having two small quarter circles, with a short piece of straight string between.

The next consideration is the framing for quarter landings. This should be properly laid down in order to give the exact cuts for carriages. To do which set off on the right and left the thickness of strings, indicated by dotted lines extended, which gives a direction to draw the solid lines A D and D A. Thus forming face of landing between the two steps. Next, set off thickness of riser from face of those curved. This done; we have A B and C D; which transfer to short carriage above, and we have the cut on its lower and upper ends. The long carriages are cut in the same manner. For example: Let dotted lines B and C represent backs of risers landing and starting. Then make B A on the right equal corresponding letters on short carriage. Draw from A face of framing. Next, let C D on left equal corresponding letters on upper end of short carriage. This done, draw from D face of framing landing. The ground plan properly laid down gives clear and plain directions to make every cut.



NEW ELEMENTS OF HAND-RAILING.—PLATE XII.

Fig. 2 shows height and pitches of wreath. The method of laying them out is the same as that for strings of stairs. For example: Let margin on the right be the edge of a board. Commence by drawing a line say A E T, extended. Then set off four spaces to equal O O on plan. Draw the lines; and spaces, of course, understood to be square with bevel lines. Letter E represents the diameter E on plan; and H above corresponds with a similar letter on plan. Let E F equal corresponding letters on left of Fig. 1. Draw square step and riser. Let next step cut perpendicular L. Draw from L to C. Set off a riser and draw step cutting at D. Again, set off a riser and draw a step. The position of next riser is obtained by drawing step N H. Here observe the letters correspond with those on plan; H being diameter, and N riser. Steps and risers are now unfolded and stand in same position as those on plan.

We are now ready to draw pitches. Commence at square step below by drawing extended line, resting on its corners and cutting at L. Now, draw from R cutting at P. Join P and L. This gives the pitches, which are nearly a straight line, yet not near enough to make one bevel answer for both joints on wreath piece. Next find height by drawing from joint V, cutting at 3. This gives 3 T as half the height. It answers for lower or upper piece of wreath, because the pitch P R is made parallel with that of F L. Find direction for ordinate by extending F L to cut at 2, giving 2, 3, which transfer to extended side of square at Fig. 3. Draw ordinate as shown. Make seat square with it. Let height equal that on the right. Then draw pitch and produce mould, as usual. The sides of square are understood to equal O O on plan, and half of major axis obtained by making N H equal one side of square. Half the width of rail on each side of H being carried up to cut the pitch, gives points for both curves on mould; also a direction to strike ellipse. The method to determine exact width of mould at each joint has already been stated; but here the cylinder being much larger than any yet shown, gives a better opportunity to explain the method more clearly. For example: Set off half width of rail below pitch. Then draw parallels with it, cutting bevels on right and left at B and D; giving D C for half the width of mould on straight shank, and B A for that of joint V. Then the width of mould on the right being drawn to cut line ● T shows the elliptic curve must pass through the intersections; thus proving the accuracy of bevels and curves. The tangents T L and L V being equal to the pitches at Fig. 2, proves their correctness.

The square sections show the joints and application of bevels.

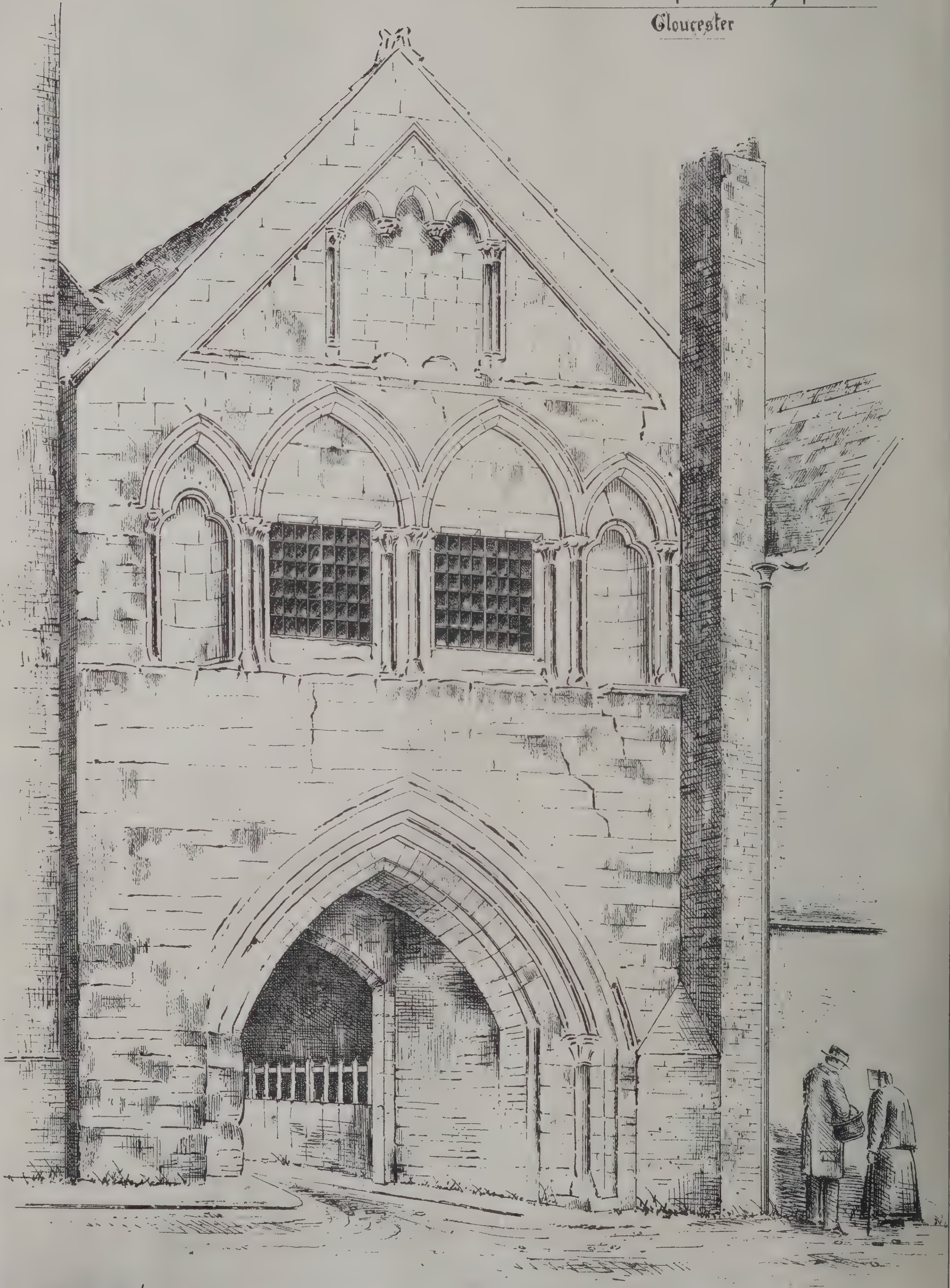
◆

ERRATUM.—By an awkward mistake, the title of one of the illustrations in last week's BUILDING NEWS was incorrectly printed. Instead of being "Ely Cathedral Interior," it should have been "*Lichfield* Cathedral Interior." Subscribers will do well to make this correction on the plate in pen-and-ink, or with an indelible black-lead pencil.

---

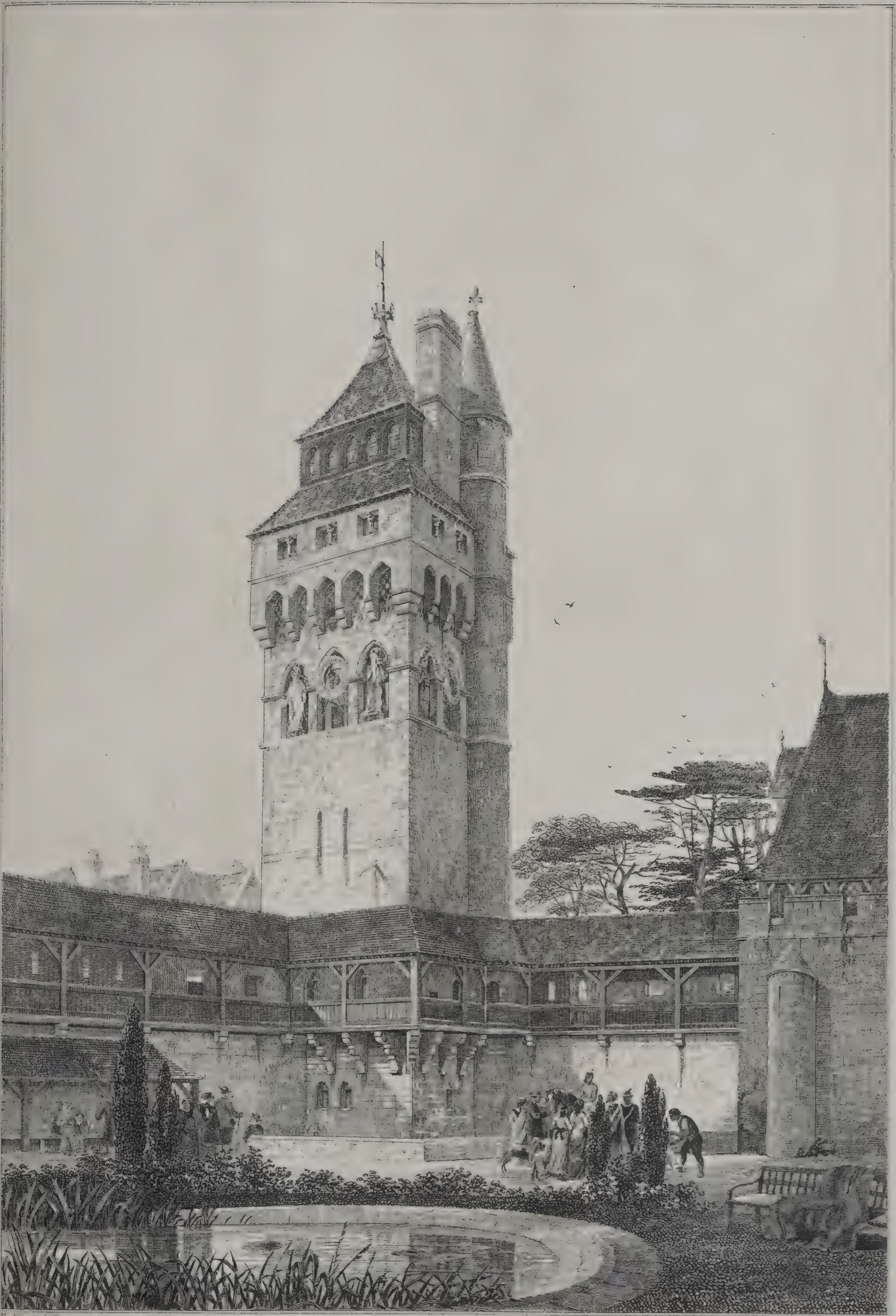
* This series of articles is a reproduction of ROBERT RIDDELL'S work on the subject, published in Philadelphia, and by by Trübner and Co., London.

The Western Gate of the Abbey of St Peter
Gloucester



From the windows of this Building Bishops Gardiner and Bonner witnessed the execution of Bishop Hooper— Sketched July 1869, C.N. Tripp.

Photo-Lithographed by Whiteman & Bass, London.



H Att [illegible] Lith

Printed by Whiteman & Bass

New Tower, Cardiff Castle,

W. BURGES, ARCHT.

Furniture & Decoration.

HOUSE PAINTING AND DECORATION.

BY "AN EXPERIENCED WORKMAN."

DECORATIVE PROCESSES.

(Continued from page 394.)

THE connecting of ornament by lines is, of course, a necessary part of all decorative processes. Lines in connection with stencilled ornament are much better done with the flat fitch or lining tool and straight-edge than if stencilled or done with the pencil, except the line be broken by stops or ornament, in which case it is better done with straightly cut stencil-lines.

In lining with the fitch and straight-edge, or both (which method we consider to be the best for ceiling and wall work), there are two things necessary, viz., a good lining fitch or tool, and a straight-edge or lath. Of the former, there are several kinds in use, and, of a necessity, of different lengths and thicknesses. Scene-painters and many house decorators like the lining fitch to be long in the hair, so that it will hold a larger modicum of colour, thus enabling the artist to run a long stretch of line with one dip of colour; others, again, prefer a short-haired fitch. The long-haired fitch is a useful tool in practised hands, but requires to be used with great skill, in order to keep the line of one uniform thickness throughout, as it will be evident that the slightest inequality of pressure will cause the fitch to spread, and the line, as a natural consequence, will be irregular; for if the extreme end of the hair is used without direct pressure, the line will only be of the same thickness as the end of the tool. As we have before said, it is only highly-skilled workmen who can accomplish this properly. A good lining fitch or tool should be made so that when in use it shall form a line of the same width as the width of the body of the hair; for instance, if we want a line one-eighth of an inch in width, the fitch should be made to run the line that width only, and no more, except much pressure is used. This may be accomplished by making the lining fitch or tool in the following manner:—The hair should be fixed in tin, which tin is secured to an ordinary wooden handle of the usual strength and length. The hair should project from the tin about three quarters of an inch, and be cut in a slanting direction to three-eighths of an inch, leaving the hair three quarters at one side of the tool and three-eighths on the other side. The hair should be compact and firm in body, so that it will not spread to any appreciable extent. A brush or tool of this make will run a line of the exact width, or nearly so, of the thickness of the quantity of hair it contains. In using them, we require to have them made of various widths and thicknesses of hair, to run lines from one-sixteenth to three-fourths of an inch inclusive. We have just recently had some of this kind made by Messrs Hamilton & Co., and we find them answer the purpose admirably. Hitherto we have made them ourselves, and we are surprised that so little attention has been paid to the matter. It is one of those cases in which people are content to jog on in the old beaten track, without improvement. In the tool above described, the hair, being closely packed together, does not spread; and when it is filled with colour and laid on its side on the straight-edge, with the end of the hair touching the wall, it only requires to be drawn carefully along to form a straight line of uniform thickness; and thus any person, with ordinary care and skill, may execute such work. Before commencing to run the line, it is always the safest plan to strike a line with the chalk-line from point to point of the object to be lined, as a guide in placing the straight-edge. Except this be done, mistakes are very liable to be made.

The colour to be used in lining with the fitch should be mixed so as to work freely. Thick colour will not leave a sharp edge, and, in fact, cannot be used with anything like success. It may also be observed here that in lining it is best to draw the lining tool along the straight-edge with a quick, steady motion, and, if possible, not to take it off the wall until it has traversed the whole length of the lath. The line will be truer thus than if it is drawn with a slow, hesitating motion. The best kind of lath or straight-edge is made of either baywood or lancewood, and should be about 2in. or 2½in. wide, and about ¼in. thick, having one edge bevelled to one-eighth of an inch in thickness. This will be found of the most useful size and weight, enabling the workman to hold it with one hand while he uses the fitch to line with the other. On the other hand, if the lath be too heavy or too long, it will require two persons to do the work of one. A very useful plan, especially in lining ceilings, is to have a tin dipper or "tott," made with a handle on one side; through this handle a strap or string may be passed, and the strap buckled round the waist with the dipper in front, a little to the right side. By this means the workman has his colour always at hand, and has no occasion to keep continually stooping for a dip, which causes much unnecessary labour, and, in many cases, the cost of a boy to hold the colour for him. The lath or straight-edge should be wiped continually, in order to avoid soiling the work in placing it on the wall.

Lining with the pencil has its own peculiar work, much of which cannot be done with the fitch or lining tool we have been describing; but much of the work done with the fitch may, of course, be done with the lining pencil. A very simple and useful invention for lining with the pencil has recently been patented by Messrs. Jones & Sheffield, decorators, of 4, Walnut-street, Hulme, Manchester. The invention consists of, first, a straight-edge having a slot or groove cut on the opposite side to the bevel edge, which is thicker than the ordinary straight-edge. This slot runs the whole length of the lath, about a quarter of an inch from the top edge. On this edge two brass-headed pins are fixed, one at each end of the lath. This lath or straight-edge is also divided into inches and parts, which is, although not necessary to the working of the invention, a very useful addition. The second part of the invention consists of a small brass instrument, having one of its parts made to fit in and run along the slot or groove in the straight-edge; the other part is so arranged that a pencil-stick may be fitted into it by the aid of a small screw turned by the hand. The method of procedure is as follows:—The straight-edge is placed upon the work to be lined, with the heads of the two brass pins exactly upon the chalk line, which pins act as guides for this purpose. The pencil being fixed in the brass instrument is then charged with colour and the projecting tooth or peg is placed in the slot or groove of the straight-edge and drawn along in the usual manner. The great advantage in this invention over the old system lies in the fact of the pencil being kept steady, and the line perfectly straight, by the guiding power of the slot or groove; for it will be evident that when parallel lines have to be run they will be much more correctly done with the aid of this simple method than by depending solely upon the steadiness of the hand. Another advantage which may be claimed for this invention lies in the fact that persons who have not had much experience in lining may run straight lines with it. Lining with the pencil in the ordinary manner is one of those things which cannot be done well without a very large amount of practice, and there being a large proportion of workmen who have to do lining without that advantage, to such this invention will be a great boon. Fitch lining and pencil lining differ also in the fact that in running light-coloured lines on dark grounds the pencil will lay on a much heavier and more solid body of colour than is possible to be done with the fitch, which is of course an advantage in favour of the pencil. Lining pencils differ from all other pencils in having a square end, and being made with the hair considerably longer. They are generally about 2¼in. long, and of various thicknesses, according to the width of the line required. Sable-hair, of which these, and, in fact, all the best pencils used by the decorator and artist are made, is obtained from a species of marten, but differs materially from the marten-hair proper in having a strong spring and fine soft point. Cheap sable pencils are usually made of sable and marten mixed, or sable and dyed camel-hair. The chief supply of the best sable-hair is from America, although large quantities also come from Russia, but the latter is of much less value for artistic work. The red sable-hair is obtained from a very different animal. It is a much stronger hair than the other, and being less pliable is not so reliable for making good pencils. It is, however, of great service in manipulating heavy pigments. Our supply of red sable is obtained only from Russia and Siberia. The high price of sable pencils arises from the fact that it is only the hair on the tails of the animals which is available for the manufacture of pencils. In selecting pencils the chief points to be observed are—that the quill should be well filled and the hair firm and solid, tapering to a fine point, which, in using, should always retain the point unbroken. When testing, wet the pencil, and place the point upon the thumb-nail, twisting it round the while; if it retains its point it may be considered a good pencil, but if the point splits or the hair spreads, it is best to reject it at once, as it will never be any good. The same test will apply to writing pencils; but lining pencils being required to work at their full breadth, a fine point is not necessary. Camel-hair pencils are commonly supposed to be made of the hair of the camel. Pencils have no doubt been made of camel-hair, but, singular to say, the pencils sold and universally accepted as camel-hair are made of the hair of the North American squirrel, and there is no resemblance between the hair of the two animals. We get a good supply of this fur from Siberia, but this is only used for some of the larger brushes, and is not fitted for making pencils. In selecting camel-hair pencils, the same tests hold good as those for sable pencils.

BUHL WORK AND REISNER WORK.

BUHL was a cabinet-maker in the days of Louis the Fourteenth, and was instrumental in bringing into use a kind of decorative furniture, or furniture decoration, which has been more or less in favour ever since. It was not usually, in his work, actual wood that formed the surface; more frequently it was brass, silver, or some other metal, inlaid in tortoise-shell, on a wood backing. The mode of procedure was curious. A layer, say, of brass, and a layer of tortoise-shell, each as thin as veneer, were glued on opposite surfaces of a piece of paper; another piece of paper was glued outside, a pattern or device was drawn on the outside paper, and all the lines of the device were cut through and through with a fine saw. A little moistening removed the papers, and separated the inlay. What followed? Two patterns could be produced out of the two veneers: a brass inlay in tortoise-shell, and a tortoise-shell inlay in brass. The inlays thus fabricated were applied as veneers to the surface of a cabinet or other article of furniture. Old cabinets thus adorned by Buhl and his contemporaries are now eagerly bought up at high prices by art-collectors.

Another cabinet-maker of the same period, Reisner, varied the form of his productions by employing two kinds of wood instead of brass and tortoise-shell, usually selecting tulip-wood and some darker variety. This was called Reisner work; like real Buhl work, it now commands high prices. It is evident that, the principle once being clearly understood, its application may be almost infinitely varied, according to the choice of materials, whether tortoise-shell, ivory, mother-of-pearl, ebony, fancy woods, gold, silver, brass, copper, or what not. Cheap imitations of Buhl work are now produced by cutting out the veneer patterns with a stamping press, instead of by the slower aid of a saw. Other cheap imitations are made in the papier-mâché workshops of Birmingham; fanciful patterns in brass, stamped out, are fastened down upon papier-mâché, and the interstices of the device gradually filled up with successive coatings of black japan varnish. As to the devices that may be cut out with a fine saw, the fretwork of a pianoforte furnishes a very good example; although it is not often that the workman attempts anything of a pictorial character therein.—*Scientific American.*

◆

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

At the ordinary general meeting of the Institute on Monday evening last, Mr. T. H. Wyatt, President, in the chair, the following gentlemen were elected:—Messrs. Thomas Ebdy, Richard S. Lander, and James J. McCarthy, as Fellows; and Messrs. Septimus Mawley, Robert Norton, Alexander Payne, John M. Rogers, and Thomas Wonnacott, as Associates.

Professor Donaldson then read—

A BRIEF NOTICE OF THE LATE SIGNOR RAFFAELLI POLITI, OF GIRGENTI, SICILY, HONORARY AND CORRESPONDING MEMBER.

In attempting a short memoir of our deceased colleague, I am reminded that so long ago as 1812 our late President, C. R. Cockerell, Esq., made his acquaintance at Girgenti, as I also did in the year 1821. He was then in all the flush of youth, of an eager earnest temperament, and following up the studies of archæology and the fine arts. The love of them was impressed throughout his whole nature, and was the passion of his existence up to the last moments of his life. We, who live in the centre of a vast capital, and have the freest access and command of every facility for study and the practice of our art, can scarcely form a conception of the struggles to be gone through by a young man in a remote country, without books, without a congenial and inspiriting circle of educated friends, and without the commonest materials at hand to enable him to realise the fruits of his own conception, and upheld only by the strength of his convictions and inspirations.

Girgenti, although lying in the southern coast of Sicily, and with a harbour, small and insufficient, it is true, is almost entirely without commerce, and nearly without relations with the outer world. The town, although surrounded, as it were, within its circuit by a halo of many well-preserved temples of the noblest class, and by numberless and as yet unopened tombs of the Classic period, enclosing artistic riches of vases, bronzes, and like deposits, and with a good-sized cathedral, far famed for its echo, boasts only of one street.

It was in such a place, and under such circumstances, that Politi painted, having to prepare his own canvas and grind his own colours. He excavated among the Greek sepulchres, enraptured by the beauteous forms of the ceramic vases covered with exquisite historical paintings. He pored over the few books he had purchased with his humble savings to find out the subjects; he delineated them, and wrote descriptions of his findings. Himself composed the type, and printed many of them in a press he had set up in his own house. He also engraved the plates, and struck off impressions in the like manner. He did not get rich by such works, there being little or no sale for them at Girgenti, and he distributed them freely among his friends. There is an incident connected with one of his pamphlets of peculiar interest to us. From his study of the vases, and a comparison of the subjects with the outlines of our own Flaxman, a copy of which he possessed and cherished as a treasure, he entertained the deepest reverence for the talents of our countryman. A false report was current in 1826 throughout Europe, as even previous ones had been, that Flaxman was dead; but he had been only seriously ill and was recovered. Politi, with his usual characteristic impulse, was struck with sorrow for the supposed death of a man whom he considered to be one of the most illustrious of artists. He had recently extracted from a tomb an unique Greek vase with a beautiful subject, and had completed a description, which he had illustrated by a plate. He dedicated it as a fitting tribute to the *shade* of Flaxman, and sent over to me twenty copies to distribute among our sculptor's friends and admirers. But here was Flaxman living! and I felt embarrassed. However, I soon made up my mind; knowing Flaxman personally, and assured of the calm religious philosophy of his nature, I called upon him and frankly told him my commission. He answered me with his usual placidity, "I value your frankness, and appreciate fully this warm-hearted act of the Signor Politi. Be not disquieted, it does not otherwise affect me, for a man at my age ought always to be prepared to die." Within a month Flaxman was laid in his grave!

In Girgenti, as travelled architects are aware, are the ruins of the immense temple of Jupiter Olympius, rivalling for extent even those of Selinus. Its plan occupies a parallelogram, about 363ft. long by 177ft. wide. It was pseudo-peripteral, having an enclosure wall all round, with fourteen attached columns on the flanks, and space for seven at each end—the angle ones included in all forty-three. The columns were 13ft. 2in. in diameter, and I could easily lie in one of the flutes. To the classic student this was a riddle, for apparently in the middle of each end front there would be a central column like the Basilica at Pæstum. But there was still another riddle to solve. Among the ruins, when the government had had the site cleared so as to expose all the blocks of stone, were parts of colossal statues, and the several portions of a complete figure 25ft. in height were collected and put together, lying at full length on the ground. It was evident that the figures had not been isolated but attached. Tradition had for ages given the name of the Temple of the Giants to the mass, interspersed as it was with fragments of those figures; and the modern city in the middle ages had adopted three of them for their arms.

Politi took upon him to solve this riddle, dissatisfied with a design previously made in 1812 by his friend Cockerell, who had left with the English vice-consul a sketch, showing a row of Titans between the windows of the clerestory wall of the restored nave, and upholding the roof. This is published in the supplementary volume of Stuart's "Athens." But this arrangement required twenty-four giants, and there were discovered only the parts of four, according to my own observation; Politi could only see three. Our friend pondered over the puzzle of the proper allocation of these few colossal statues, and a passage in an old writer, Fazzello, who states that there was a mass attached to three giants, and certain columns still remaining upright. These stood till 1401, when, from neglect of the Agrigentines they fell down, forming a vast pile of stones vulgarly called the "Palace of the Giants."

Politi published a folio work, a copy of which I now present, with four plates giving the plan; restored elevation and details of the parts still existing; and to obviate the irregularity of a column in the centre of the front he introduces a vast aperture, 53ft. high and 33ft. wide, divided in the centre, as in some of the Gothic cathedrals, by a clustered shaft, the upper part of which consists of three gigantic figures. Such an arrangement under the circumstances is a clever adaptation, but the Classic scholar of our art will consider it rather as fanciful and ingenious than as legitimate or thoroughly satisfactory. Whereas Cockerell's position of the giants is perfectly in accordance with precedent, and Politi, in 1825, had discovered the fragments of ten figures. In fact, the two friends seem to have revelled in the opportunity of producing something novel and effective to meet the difficulties as to the position of the giants; and probably no more rational scheme will ever be suggested to settle satisfactorily the problem of the restoration of this original and truly gigantic production of Greek art.

Mons. J. J. Hittorff, in the noble posthumous work recently published by his son, omits the central column of the front, and introduces a doorway with an opening almost as large as that of Politi's, with the usual dressings; but unless these were made to advance before the face of the wall as much as the columns project, there would not be any sufficient support for the architrave in this wide intercolumniation of nearly 40ft. From a very minute study of the indications of the construction at the level of the floor-line, my own impression confirms that of Mr. Cockerell, that there was a (comparatively) small door at each end of the front next the angle columns, and thus entering direct into the side aisles and not into the central nave.

Politi was a man of immense energy. He built a theatre and wrote pieces; for his comic vein, the peculiar natural gift of the Italians, was overflowing: and even in his letters there was a bright spirit and sparkling wit, which seemed to counterpoise the depression in which he too often wrote to me. The government appointed him Curator of Antiquities, which yielded him local importance rather than official honoraria. He was also Consul for some foreign state, which entitled him to certain immunities. Thus he struggled on with adversity up to his death, painting and writing being his great solace: "*labor mihi sola quies*," his oft-repeated motto. He was honoured by those few congenial souls who knew his qualities; and by the rare intelligent travellers, such as our own Samuel Angell, when engaged in laying bare the archaic remains of Selinus; by G. L. Taylor, our Fellow, as mentioned in his Autobiography just published; and by our valued Honorary and Corresponding Member, the late Monsieur Hittorff, who got him named Correspondent of the Institute of France. He valued such connection with the various learned and artistic societies of Europe, whose members willingly associated his bright genius with their own researches. But the cares and expenses of a numerous family, the loss of his beloved wife, increasing infirmities, and advanced years, weighed heavily on his elastic spirit, producing great nervous irritability, and he closed his career of intelligence and usefulness in October last, fully eighty-six years old, and, I fear, in want, sorrow, and bodily suffering.

Owing doubtless to the extreme inclemency of the weather, there was a very thin attendance of members, and, at the suggestion of the President, Professor Ansted kindly consented to postpone the reading of his paper—"Considerations on the Selection of Building Sites"—to some future occasion, when he might be sure of having a larger audience. A vote of thanks to Professor Donaldson for his interesting memoir of the late Signor Politi having been accorded by acclamation, some business of a private nature was transacted, and the proceedings terminated. It was announced that at the next meeting, on the 19th inst., the following paper will be read:—"On the Mystery of the Tomb of Charlemagne, and the researches made of late years to discover its actual site in the Cathedral of Aix-la-Chapelle," by Professor Donaldson.

◆

THE AMERICAN INSTITUTE OF ARCHITECTS.

On the 9th ult. the fourth annual convention of the American Institute of Architects was held at New York. The principal subject presented for consideration was a schedule of terms regulating open and close competitions for architectural works proposed by the Board of Trustees, which, with slight amendments, was unanimously adopted. The following is the schedule of terms regulating open and close competitions for architectural works, recommended to all architects, building committees, and proprietors throughout the country:—

1. The instructions must not require more drawings or estimates than are necessary in order clearly to explain the design, and should require that all the designs submitted be drawn to a medium scale, which must be clearly defined, and that all perspectives required be drawn to the same scale as the geometrical drawings, and on a plane at the corner of the building nearest the point of sight; a deviation from which will cause their rejection.

2. In case the amount to be expended is limited, the instructions must state that an excess of 10 per cent. on the expense of executing any design, over and above the sum mentioned, will exclude it from the competition; the cost of expense to be estimated by the professional experts in the jury; and in case the amount to be expended is not fixed, then the competitor may use his own discretion as to the costliness of the design which he makes.

3. A design will be excluded from the competition if sent in after the stated period, and if it contains deviations from the instructions. If, from any of the above reasons, all submitted designs are rejected, then the jury are bound to publish reasons which led to their verdict.

4. The period given for preparing the design must be long enough not only for perfecting a design and preparing the necessary drawings, but must make some allowance for the ordinary occupations of competitors. An explicit statement must be given as to the time when the decision on the merits of the designs is to be rendered, and that all designs shall be returned to the authors of the same. An architect's drawings are his own private proderty, unless paid for, in which case they are for the sole use and benefit of his client; but the actual drawings still belong to the architect who made them.

5. The designs should be submitted to a jury of experts, whose decision is to be final. One-half of the jury should be architects, and, in case of an open competition for a public building, they should be selected by the Institute of Architects or its Board of Trustees, the other half to be appointed by the Building Committee or owner. The jury must be named in the instructions, which they shall have sanctioned before publication. No person can be competent to serve as juror who submits a design, or is in any way interested in any design submitted, or who has not renounced all intention of participating in the execution of the work.

6. All designs submitted in open competitions for public buildings should be publicly exhibited two weeks before the decision is made.

7. In the case of open competitions the first premiums must not be less than the amount which the architect would have received had there been no competition, and at least an equal amount should be divided among the other competitors, according to the merits of the designs submitted.

8. It is recommended that, in close competitions wherein the number of competitors is limited, a sum equal to the full value of one design be divided equally among the authors of all except the premiated design, which shall be compensated for as provided in the last preceding rule.

9. The instructions must state that in case the building is erected after any of the designs are submitted in competition, it must be given in charge of the author of the first premiated design, who is to be employed at the usual compensation; and if any other designs, or part of designs, are used, it can only be done with the consent of the authors of the same, and they must be compensated for the full value of the designs or parts of designs used, irrespective of the premiums that may have been awarded.

10. The premiums must be awarded, under all circumstances, for the designs which may have been admitted in competition.

11. It is recommended that, in the schemes of competition, it shall be provided that the names of the competitors shall not be known to the jury.

The following resolution, offered by the Board of Trustees, was also adopted :—

> "*Resolved*, That a Special Committee of five be appointed by the chairman to compile a pamphlet defining the exact duties and responsibilities of architects, their relations to each other, to their clients, and to the various parties under their control; and to give definitions and explanations of the schedule of charge, and any additions to them that may be thought necessary; and to present the result of their deliberations to the next Convention of the Institute; such report to present what is, rather than what should be, the best practice of the profession."

◆

CHANCEL AND APSE, S. LUKE'S CHURCH, TORQUAY.

DURING the past three months, Messrs. Heaton, Butler, & Bayne, have been engaged in embellishing the chancel roof and apse of S. Luke's Church, Torquay, from the designs and under the superintendence of Mr. Blomfield, architect. On each side of the roof there are twelve panels, which contain allegorical designs, illustrations of the Benedicite. In the three panels at the top, on the left hand side approaching the altar, are angels holding scrolls; the next three represent "Fowls of the air," "Beasts and cattle," "Children of men, Shadrach, Meshach, and Abednego;" then are three more angels holding scrolls, and under them "Angels of the Lord," "The sun and moon," and "the stars of heaven,"—"Oh, all ye works of the Lord, bless ye the Lord," being inscribed in white letters on a red ground at the bottom. On the right hand side, angels holding scrolls are also placed in the top and third row of panels. The second row, "Holy and humble men of heart" are represented by Noah, Job, and Centurion; "servants of the Lord" by SS. Ann and Mary Magdalene, "Angels of the Lord." The bottom row: "Lightnings and clouds," "Green things of the earth," and "Whales and fishes," under which "Let everything which hath breath bless the Lord" is inscribed. The Te Deum is illustrated on the apse, which is divided into twenty-five panels, five in a row. The upper five represent the sun's rays in gold and illuminated colour; the next five are occupied with suitable inscriptions on gold labels with red grounds. In the three centre ones of the third row are emblems of the Holy Trinity, "The Son," "The Father," "The Holy Spirit;" on either side being "Israel, Abraham, Moses, David," and "Priests of the Lord, Samuel, Melchisedeck, and Aaron." The next five have angels holding scrolls, and the lowest row "Cherubim and Seraphim;" "Apostles, SS. Peter, Paul, Matthew, &c.;" "Prophets, Hosea, Daniel, Ezekiel, &c.;" "Martyrs, SS. Agnes, Stephen, Catherine;" "Holy Church, SS. Jerome, Ambrose, Austen, Gregory." "Holy, Holy, Holy, Lord God of Sabaoth, Heaven and Earth are full of the majesty of Thy Glory," is written under in gold on a red ground. "The crown of thorns and cross," in gold, red, and black, on white ground, are placed underneath. The walls on each side and over the altar are ornamentally diapered and blocked, interwined with the passion-flower. The reredos contains illustrations of "The Last Supper," with gold background, the elements being shown by bread, Indian corn, and grape vine, with the texts, "I am the bread of life" and "I am the true vine." The evangelists, SS. Matthew, Mark, Luke, and John, are shown boldly in gold and illuminated colours on red grounds. Roses growing from vases, showing the emblems of the Passion, the passion-flowers, and lilies are depicted. An extremely pretty diaper pattern is carried underneath the whole. The subjects are executed mostly in gold, interspersed with rich colours of various hues, the backgrounds being of two colours, resembling the native soil of the country, dark sombre rock green, and red sandstone. Altogether the work is a splendid specimen of church decoration, and doubtless surpasses everything of the kind in the county; the colours are bright, brilliant, and harmonious, the whole presenting a most artistic and pleasing appearance. The contractors have carried out the work in a satisfactory manner, Mr. Barron acting as their foreman. The chancel was reopened on Thursday week.

◆

ELVEDEN HALL, SUFFOLK·

THE seat of His Highness the Prince Dhuleep Singh has been rebuilt by Mr. Norton, architect, of London, and is now sufficiently advanced to serve for the partial occupation of His Highness's family. The portico, domestic offices, &c., however, have yet to be built. The exterior of the edifice, of red brick with stone dressings, is in the Italian style of architecture, but the interior has by the Prince's wish been finished in the Indian style. The architect, by selecting only the most graceful of the Indian details, has produced a very happy result—and, in passing, we would observe that it seems a question worth considering by architects whether some of the Indian ornament might not advantageously be engrafted on the pseudo-classical style now in use,—getting variety without injuring character. It would certainly be better than that curious mixture of Classic and Gothic which some affect. The beauty of the ornament, being as yet devoid of colour and gilding, does not show to full advantage, but even now is much admired.

The entrance hall, of ample size, is surrounded with an arcade, the arches cusped, and columns profusely ornamented. The arch spandrels are filled with rosettes and foliage. The soffits of arches are moulded and decorated also with rosettes. The ceiling is divided into compartments by beams, which are richly panelled, and supported at ends by elaborate corbels. The several compartments of ceiling are covered with raised ornament, the designs being varied. The chimneypiece (not yet fixed) is of elaborate design in white marble. Across the hall, forming a lobby, is a glazed screen of fanciful character; the glass in it frosted and embossed with a flowing characteristic Indian pattern. The centre of the floor is boarded (to be covered with an Eastern carpet), surrounded by a margin 3ft. 6in. wide of marble and richly coloured encaustic tiles, made purposely by the Messrs. Maw. Adjoining the entrance hall is the grand staircase, which is of polished white marble, the risers of steps having a leaf ornament sunk upon them. The soffits of steps are moulded, the soffits of landings having sunk panels and flower ornament. The stair balustrade is of cast-iron, of elaborate and novel design and excellent workmanship. This stair goes up to the second floor, and on each story are enriched cusped arches leading to corridors, &c.

The dining-room ceiling is exceedingly rich. It is formed into panels of many varied shapes and sizes, but making a general uniform design. The larger panels are filled with conventional foliage in relief, and the lesser ones with small convex mirrors, of which there are about four hundred. This is a peculiarly Indian and effective decoration. The room has an elaborately rich cornice with consoles, the cove panelled and ornamented with flowers, and having a profusion of most effective drop ornaments. The chimneypiece is of inlaid white marble. This and the wall decorations are not yet finished.

The drawing-room ceiling is divided by beams and has large cusped Indian panels with rich flower ornament, but has, as yet, much unoccupied space, to be presently filled in by a peculiar Indian mode of decoration, and for which Indian artists will probably be required. The walls of this room will be covered with Indian embroidery let into moulded panels similarly to the adjoining library.

The boudoir is the only room which preserves the character of the exterior of the mansion. The decorations, of an elegant kind, are in carton-pierre, by Bockbinder. The modelling alone of the ornament in the apartments described is said to have cost £8,000. The upper part of the house will be dependent mostly on coloured decoration. The works have been executed under Mr. Norton's superintendence by the well-known firm of Cubitts, of Gray's-Inn-Road, London, and in that pre-eminent style of excellence for which they are famous. Mr. Wall was clerk of works, and Mr. Bush superintendent on part of the builders; Mr. Thacker was the surveyor employed.

◆

THE RESTORATION OF BATH ABBEY CHURCH.

A PUBLIC meeting was held last week in the Guildhall, Bath, to receive the annual report and financial statement of the committee engaged in this, one of the great works of church restoration in the West. The chair was taken by the Bishop of Bath and Wells. The bishop congratulated the citizens upon having thus far carried the great and noble undertaking to a successful issue. The edifice had been restored with such magnificence, and good, solid, architectural taste, that it would leave a good mark upon this particular question. The sixth annual report was presented by the Rev. Prebendary Kemble. In this it was stated that the original estimate for the whole of the work was £20,000, and in all probability this expenditure would be reached, if not exceeded. But as private individuals had liberally contributed portions of work, the task of raising the entire sum had not fallen upon the committee. For instance, the Freemasons had undertaken to restore the west front; thirteen stained-glass windows had been inserted, and the organ had been renewed at a cost of at least £5,000. At the commencement of the work it was divided into three portions. The first was essential to the preservation of the fabric, and comprised the roofs, windows, and battlements, the cost of which, including all contingencies, was £5,814 3s. 7d. In 1868 the substitution of a stone groined ceiling in the nave for the plaster ceiling of Bishop Montagu was effected at a cost of £5,500. The third portion, now in progress, was the adaptation of the building thus substantially restored for the purposes of Divine worship. The ribs of the nave and transepts, and the pillars of the nave, had been cleaned and repaired, the mural tablets had been rearranged, and the floor had been rendered firm by a sub-stratum of concrete. Contracts had been signed with Messrs. Haden, of Trowbridge, for heating; with Mr. Brook, of Bristol, for oak seatings, &c. The cost of these works was estimated at £6,000, and towards it about £1,000 had been paid and promised. In eighteen months or two years the committee anticipate that the whole of the work will be completed, and by that time they are anxious to be able to clear themselves and the church of all pecuniary liability.

◆

THE LEICESTERSHIRE ARCHITECTURAL AND ARCHÆOLOGICAL SOCIETY.—A bi-monthly meeting of this society was held in the Town Library, Guildhall, Leicester, on Monday week. The following gentlemen were admitted members:—Clifford Chaplin, Esq., Asfordby Hall; Mr. William Barber and Mr. G. Nattress, both of Leicester, architects; and Mr. Samuel Barfield, of Leicester, sculptor.—Mr. Fletcher, of Belvoir Castle, exhibited a photograph of an ancient carved stone, now inserted in the porch of Knipton Church. Judging from the character of the sculpture (which was not very distinctly given in the photograph), it was thought to belong to the late Norman period.—Mr. Barnard sent for inspection a fine gold Portuguese coin, lately found in excavating near Wellingborough. The Rev. J. H. Hill communicated a paper entitled "The Bishopric of Peterborough and its Prelates," being a sketch of the See, with notes upon its Bishops to the present time.—Mr. Joseph Burtt, Assistant Keeper of the Records, London, placed at the disposal of the society his "Contributions to the History of Leicester Abbey," read at the late Congress of the Royal Archæological Institute in Leicester.

Civil Engineering.

◆

ON THE THEORY AND DETAILS OF CONSTRUCTION OF METAL AND TIMBER ARCHES.*

ELASTIC arches supporting a road or railway were connected to the horizontal platform by pillars and filling pieces, occupying the spandrels. The office of these parts was to transmit the load of the platform to the resisting arch; no other function was usually attributed to them, and the arch was the important member on which the whole rested. The spandrel, however, forming always a rigid filling or system, contributed powerfully to increase the resistance of the structure, so that it would be justifiable to consider as the chief member, not the isolated arch, but the framework, more or less complex, constituted by the arch, the spandrel filling, and the longitudinal horizontal piece placed at the level of the platform. Under this point of view, the arch might be assimilated to a chain of articulated segments, presenting two modes of calculation which were severally examined.

In the articulated system it was necessary to choose a single triangulation, where every piece was essential; for otherwise, if, for example, two diagonals were introduced in each bay, the calculation would become indeterminate. At the summit, the two half-spans were joined by a simple point of articulation, like those of the other summits of the triangulation, while the longitudinal horizontal piece was useless in theory; and in practice it would be desirable to provide it with a free sliding joint, in order that nothing might impede the expansion of the fixed portion. Under these conditions, the elements of statics furnished easily the stresses on all the pieces, of which an example was given. When the stresses in the various parts of the arch or of the longitudinal were known, the stresses in the spandrel bars could be deduced by simple graphic decompositions, based on the equilibrium of the summits of the system. Of this also an example was given, with further calculations.

For a determined fixed load there might be given to the arch the form of a funicular polygon, a figure of equilibrium such that the articulated chain might maintain itself in position without the intervention of the other pieces of the framework. In a bridge the load varied, but it was desirable the figure of the arch should approach that of equilibrium corresponding to the complete load. This form would be the curve called the catenary for an arch of uniform section carrying only its own weight, and the parabola for an arch loaded uniformly per unit of length on a horizontal line. This latter was the case in suspension bridges, and also in bridges with compressed metallic arches, for the weight of the arch and the spandrels had but little influence, proportionately, to that of the horizontal platform and its test load.

The second mode of calculation referred to rigid arches, and consisted in restricting the spandrels to simple supports for transmitting the loads. The arch was then more strained, and ought to be rigid, for the funicular form only gave an instable equilibrium, corresponding to a particular state of the load. As soon as this state was changed, the arch no longer suffered simple compression, but was disposed to bend, *i.e.*, to change its figure.

In an arch of masonry, the effect of the mortar was neglected, and the voussoirs were regarded as blocks placed in juxtaposition without adherence, having the power of pivoting one on the other, round the edge either of the intrados or of the extrados; that was what was called a system of alternative articulation. The centre of pressures, *i.e.*, the point of application of the resultant of the elementary re-actions of the joint, was considered for each joint. The locus of these centres, or the curve of pressures, ought not to pass outside the thickness of the arch, or the pivoting of certain of the voussoirs would take place; the curve ought even to keep within a zone more limited than that of the arch, for fear of endangering the crushing of the stones.

An elastic arch was subject to other conditions. If the connection was very good, as was (or ought to be) the case with plate iron, the arch formed an entire piece, suitable to resist both tension and compression. If it was treated as an arch by the curve of pressures, this curve would no longer be required to remain within the arch. When the arch rested upon the abutments by an extended sustaining surface, being keyed by a range of wedges there was nothing to prevent certain of these wedges being driven tighter than others. This would then modify the point of concentration of the thrust upon the abutment, and consequently also all the other points of the curve of pressures. Hence arose the uncertainty which generally attended the method of the curve of pressures, these pressures only being determined by arbitrary data in regard to the original keying-up, or the yielding of the materials.

The author considered the proposal to provide a metallic arch with three pivots, or hinges, one at the summit, the other two at the supports; but hitherto, so far as he was aware, no one had ventured to apply three pivots to large works. M. Mantion had, however, employed two pivots at the supports in an iron bridge of the St. Denis canal and the effect of such a system was examined.

The theoretical calculations of deformation might be applied with confidence where the arches consisted of a single piece of homogeneous metal. Arches in solid wrought-iron plate might be considered to belong to this category, the metal having been well worked, and the connections being as solid as the continuous parts. The theory of these arches had been the object of the researches of M. Bélanger, and subsequently of M. Bresse, who had entered into great detail respecting them in his Treatise on Applied Mechanics (Stabilité des Constructions). An explanation of his principal formulæ was then given.

The Author next proceeded to consider the details of construction of arches of different materials. He remarked that structures in timber were the most economical in many countries, but their durability was limited. The principal type of timber arches appeared to be that inaugurated at Yvry (Seine) by M. Emery, where the arches were composed of strong pieces of carpentry superposed to the number of three, for example. But it was preferred in many cases to leave open the intervals between the several pieces, in order to allow better ventilation, and to prevent them from heating; and further, because this plan gave an increase of depth to the arch, and, consequently, a more ample field to the oscillations of the curve of pressures. Certain timber bridges presented a compressed arch, a tensile tie-bar, and vertical connecting-rods, a system which was allied to the bowstring form. The flat arches of Wiebeking (Bavaria), and those in thin layers of planks superposed of Emy, would appear only suitable for roofing purposes, being too subject to deformation for bridges. Among the American forms of trellis framework for straight beams, capable of competing with arched openings, the system of Howe, having iron vertical tie-rods, deserved special mention.

Cast-iron resisted compression well, but tension badly. It made good arches in the cases where the curve of pressures did not pass out of a certain central zone, and where the flexure was nothing or insensible; and on the condition that there were no powerful vibrations, *i.e.*, that the dead weight was large compared to the moving load. This last consideration led, in the case of railways, to the spreading of a thick layer of ballast on the platform, in spite of the increase of load resulting therefrom.

Wrought-iron was preferable to cast-iron, notwithstanding its higher price, whenever there was reason to fear the effects of flexure in certain parts, or when it was desired to make a light structure, without loading of ballast. There was also an opportunity of adopting pivoted supports, and of calculating the thrust according to the theoretical deformation. However, this conclusion was not absolutely true for trellised arches, which it was necessary to use in the case of very large spans. Such, for example, was the bridge at Coblenz over the Rhine, consisting of three arches, each 317ft. span. In general, a solid plate web was preferable to trelliswork for arches of moderate dimensions. In effect, the flexure was small, and the longitudinal pressure much predominated, the solid plate acted, consequently, more usefully than in a straight beam, which presented neutral fibres. Moreover, it would only be necessary to employ rivets at considerable intervals in the parts outside the joints. To satisfy the most advantageous condition, viz., a large moment of inertia, without too great depth, it was desirable to adopt for the section a double T with large wings. For large openings, however, a box section appeared to be preferred. The lateral stiffness would depend essentially on the cross framing which connected together the different arch ribs of the same span. Where this resource was wanting, *i.e.*, where an isolated arch rib must maintain itself alone, the oval section, analogous to that of the arches of the bridge at Saltash, presented itself as one of the most favourable.

Wrought and cast-iron might be associated in the same work. This combination had been adopted in a bridge of three arches constructed in the Park at Neuilly, near Paris, many details of which had been suggested by the new Westminster Bridge. All the pieces essentially under compression, *i.e.*, the spandrels and the portions of the arch near the abutments, had, for the sake of economy, been made of cast-iron, while the central portion of the arches and the lodgitudinal bearers of the platform were of plate-iron.

Arched bridges were, on principle, often more economical than those formed with girders; they admitted better of an augmentation of the dead weight, for the purpose of deadening the vibrations and increasing the probable durability. But it was necessary that sufficient height should be available, and that the abutments should be able to resist the thrust. When the work was low and the ground solid, it was easy to give the abutments the necessary stability without too much expense. The compression, tending to close the molecules of the metal, appeared to promise to such works a longer duration than would be due to pieces in tension, which threatened, after a long period, to be subject to enervation. These considerations in favour of arched bridges were, it was true, somewhat counterbalanced by the greater complication of the forms.

Bow and string bridges were, as the words implied, arches provided with a tie-rod which received the thrust upon the extremities, without the intervention of supports; so that the abutments were freed from the effect of these thrusts, and only exerted reactions in a vertical direction. The most remarkable example was the bridge at Saltash, of two great spans of 456ft. each. The arch, being single, had to be kept at the two ends at the height above the roadway necessary to leave a free passage for the trains; and this led the eminent designer, Mr. Brunel, to adopt a curved tie, and to suspend the platform at a lower level. When there were two arches, one on each side of the road, there was nothing to prevent their extremities descending to the level of the platform; the tie was then straight, and being strengthened in order to serve as a longitudinal bearer, it might support the roadway. An example of this disposition was the bridge of Audenarde, on the Scheldt.

In conclusion, the Author referred to a work he had published in 1865 ("Etude comparative sur les Ponts en Fer") in which he had given formulæ expressing the stresses on the various parts of bow and string girders, as well as the comparison between this and other systems of construction.

---

* Paper read on Tuesday last before the Institution of Civil Engineers by M. JULES GAUDARD, of Lausanne. (Translated from the French by Mr. WILLIAM POLE, F.R.S., M. Inst. E.C.)

◆

THE INSTITUTION OF CIVIL ENGINEERS.

AT the meeting of this Society on Tuesday, the 6th inst., Mr. Charles B. Vignoles, F.R.S., President, in the chair, the first ballot for the present session was taken, when thirty-seven candidates were balloted for and declared to be duly elected, including eleven members, viz.:—Mr. Crawford James Campbell, Superintending Engineer, P.W.D., Indore; Mr. John James Carey, Ex. Eng., P.W.D., India; Mr. William Bellingham Carter, District Engineer, East Indian Railway; Mr. Walton White Evans, New Rochelle, U.S.A.; Mr. Alexander Fraser, Resident Engineer to the Grand Junction Water Works Company; Mr. William Frederick March Phillipps, District Engineer, Punjab Railway; Mr. John Arthur Phillips, Aigburth, Liverpool; Mr. Arthur Potts, Chester; Mr. Joseph Quick, jun., Sumner-street; Mr. William Robert Robinson, Resident Engineer, Madras Railway; and Mr. Edward Walsh, Engineer to the River Witham Commissioners. Twenty-six gentlemen were elected Associates, viz.:—Mr. Charles Augustus Alberga, Stud. Inst. C.E., Buckingham-street; Mr. John Philip Cortlandt Anderson Ex. Eng. P.W.D., India; Mr. Thomas Ashton, late Superintending Officer P.W.D., Ceylon; Mr. Robert William Peregrine Birch, Stud. Inst. C.E., Westminster; Mr. James Bisset, Cape Town; Mr. Joseph Bourne, Resident Engineer, &c., of the Isle of Wight Railway, Sandown; Mr. John Charles Coode, Stud. Inst. C.E., Westminster; Mr. Charles Cowan, Valparaiso; *Captain* Arthur Edward Downing, Assistant Surveyor, Topographical Survey of India; Mr. Frederick Dresser, Assistant Engineer, Bombay, P.W.D.; Mr. Francis Fox, Westminster; Mr. Thomas Wilson Grindle, Borough Engineer, Hertford; Mr. John Falshaw Hobson, Assistant Engineer, Great Indian Peninsula Railway, Bombay; Mr. Arthur Lucas, Westminster; Mr. James Chatburn Madeley, Resident Engineer of the Honduras Interoceanic Railway; Mr. William Matthews, Westminster; Mr. George Palmer, Assistant Engineer, P.W.D., Government of H.H. the Nizam; Mr. Alexander Rhodes, Assistant Engineer, Great Southern of India Railway; Mr. William George Scott, Assistant to Resident Engineer, Manchester, Sheffield, and Lincolnshire Railway Company; Mr. Peter Soames, Southampton-street; Mr. Herbert Unwin, Engineer to the Gas Works, Sheffield; Mr. Thomas Finsbury Septimus Wakley, Assistant Engineer, East Indian Railway; Mr. William Thomas Walker, Donnington, near Newport, Salop; Mr. Edward Orange Wildman Whitehouse, Hampstead; Mr. Charles Henry Willes, Ex. Eng., Madras Irrigation and Canal Company, and Mr. John Hatton Wilson, Ex. Eng., P.W.D., India.

It was also announced that, acting under the provisions of Section IV. of the Bye Laws, the Council had recently admitted the following Candidates as Students of the Institution:—Arthur Turnour Atchison, James Thomas Atchison, Edward Kynaston Burstal, Edmund Emson, Walter Freeth, Charles John Goodman, Arthur Grose, Arden Hardwicke, Fletcher James Ivens, Frederick Jackson, Walter Robert Jones, John Herman Merivale, John Nowland, William Patterson Orchard, Ernest Edward Sawyer, Gilbert Stiff, Thomas Sugden Joseph Caliste Grosvenor du Vallon, and Charles Edward Sabine Younghusband.

◆

BOARD OF WORKS.—There is now a vacancy in Her Majesty's Office of Works, Whitehall-place, for a technical clerk, at a salary of £150 per annum, rising to £300 (£10 a-year), with prospects of promotion if duly qualified. Any one between the ages of eighteen and thirty desiring the appointment, who has been properly educated under an architect, should apply to the Office of Works, as the appointment will be conferred on the best qualified applicant.

CLARK'S WATER-SOFTENING PROCESS AT CANTERBURY.

PROFESSOR FRANKLAND has recently paid a visit to the Canterbury Water-Works to witness and test the application of Clark's softening process, which is there easily and successfully carried out by Mr. Homersham, C.E. The water is pumped from a deep well sunk in the chalk, and the effect of the process is to reduce the hardness from 26·3 to 4·9 parts in 100,000; while repeated chemical analyses fail to detect the slightest trace of organic matter in the softened water. Dr. Frankland speaks with admiration of the "magnificent blue tint" of the water in the Canterbury reservoirs; and it is important to note that, after having remarked of this water, "I know of no better water than this in the United Kingdom," Dr. Frankland goes on to say that "the chalk, oolite, and greensand around the metropolis contain abundance of water which is of unsurpassed purity after being submitted to this (Clark's) simple process." The *Lancet* says: "Do not this testimony of Dr. Frankland to the excellence of the Canterbury water-supply, derived as it is from the chalk in the immediate neighbourhood of the city, and his reference to the abundance of pure water lying beneath the metropolis, indicate that a solution of the difficulties which have hitherto barred the way to an improved water-supply for London lies nearer at hand than is commonly supposed?"

◆

GEOLOGICAL SYSTEMS AND ENDEMIC DISEASES.

SOME little time ago, Dr. Moffat read a paper showing that the soil has an influence on the composition of the cereal plants grown upon it, and on the diseases to which the inhabitants are subject. The district in which he practises consists geologically of the carboniferous and new red sandstone, or Cheshire sandstone systems. The inhabitants of the first are engaged in mining and agricultural occupations, those of the latter in agriculture. Anœmia, with goitre, is a very prevalent disease among those living on the carboniferous system, while it is almost unknown among those living on the new red sandstone system, and consumption is also more prevalent amongst the inhabitants of the former. As anœmia is a condition in which there is a deficiency of the oxide of iron which the blood naturally contains, Dr. Moffat was led to make an examination of the relative composition of the wheat grown on the soil of Cheshire sandstone, carboniferous limestone, millstone grit, and a transition soil between Cheshire sandstone and the grit. The result of the analysis shows that the wheat grown on the soil of the Cheshire sandstone contains the largest quantity of ash, and that there is a larger quantity of phosphoric acid in it than in the soils of the carboniferous and millstone grit system; also a much larger quantity of oxide of iron than in either of them. He has calculated that each inhabitant on the Cheshire sandstone, if he consumes 1lb. of wheat daily, takes in nearly 5 grs. per day of the sesquioxide of iron more than the inhabitant of the carboniferous system, and who seems, therefore to be subject to this liability to anœmia, in consequence of the deficiency of iron and phosphoric acid in the food he consumes. It is not only in the wheat grown upon the carboniferous system that there is a deficiency in the quantity of oxide of iron, and the phosphates, says Dr. Moffat, but also in the blood of the animals reared upon it; so that the inhabitants upon that system take in a minimum quantity of these constituents of the blood, compared with that taken in by the inhabitants of the Cheshire sandstone. He stated that sheep were liable to anœmia—a fact which he attributed to sheep walks being upon trap and limestone hills, in the soil of which there is but little, if any, iron.

◆

NEW COLLIERY SHAFTS AT SHILDON.—The sinking of two shafts to an extensive new colliery, known as Shildon Colliery, has just been finished. The colliery is said to be the largest in the South Durham coalfield. The two shafts and the walling which have just been finished are 14ft. and 12ft. respectively in diameter, and were commenced on the 29th June, 1866. The contractor for the sinking was Mr. G. Wylam, of Houghton-le-Spring, and the work has been ably and energetically carried out by his son, Mr. Jasper Wylam. Mr. W. Bains has been the resident superintendent of the works from the commencement. Land has been measured off for the erection of four rows of workmen's cottages on the south side of Redworth-road, Shildon.

Building Intelligence.

◆

CHURCHES AND CHAPELS.

AMOTHERBY.—The Rev. C. P. Peach has set about the thorough restoration of the ancient church of Amotherby, near Malton. The nave, rebuilt about 1710, and the tower remain. The south chancel wall will be rebuilt, and the north walls will be pierced for four Roman arches to add an aisle and vestry. The architect is Mr. Fowler Jones. A figure, in chain armour, and two grave covers, with crosses and an inscription to the Bordesden family (14th century) have been discovered.

ANSTEY.—An appeal has been made for funds to aid in the restoration of Anstey Church, near Buntingford. It was originally (says the *Herts Guardian*) a fine edifice of cruciform shape, and with tower in centre—like Wheathamstead. It has now fallen into a most dilapidated condition. Had Anstey been on any of the main roads of the county this church would have attracted attention, and doubtless it would have been restored long ago. But Anstey is far away from any high-road, and the visitors to it are few and far between. The church was built in the reign of Henry III., from materials of additional works made to the Castle in the time of King John, the castle itself having been built in the reign of William the Conquerer by Eustace, Duke of Boulogne.

ANTRIM.—The new (Roman) Catholic Church of S. Congall, Antrim, has just been consecrated by the Bishop of Down and Connor. The church, which has cost about £6,000, is a spacious building, built of black stone with white dressings, having a tower rising above the front entrance. It is cruciform in plan, the style being a modification of Gothic. Mr. James Connor, of Belfast, is the architect.

CHESTER CATHEDRAL.—The restoration of the nave of Chester Cathedral has so far proceeded that the special services were resumed within it on Advent Sunday. The last special service in the nave was held on Whit-Sunday this year. The old roof of the broad aisle has been entirely removed, and a massive one of the best possible oak has been substituted, the whole being relaid with the original lead, specially recast for the purpose. The oak groining is now being pushed forward as rapidly as is consistent with thorough seasoning by Mr. Thompson, at Peterborough, and will be put up in sections as it arrives at Chester from the carver's hands. The central boss will contain an emblematic device having reference to the Prince of Wales, and the other bosses will bear similar devices in honour of local noblemen, including the Marquis of Westminster, Lord Derby, Lord Sefton, Lord Egerton, &c. Until the completion of the roof it will not be visible from below, as it will be screened from view by a closely-boarded platform, for obvious reasons. The improvements which are now visible in the nave are the removal of the whitewash from the walls of the south aisle, from the handsome massive clustered pillars, and from the groining of the south aisle. This groining is of stone, and is a splendid example of its date. The bosses at the intersection of the groins, all in excellent taste, and some of them recording known epochs in the history of the building, will always be objects of interest to admirers of the beautiful in church architecture and decoration. It is intended to go on with the groining of the north aisle next spring. It has also been decided to put flying buttresses on the south side of the cathedral, which will add to the beauty as well as the stability of the building. The whole of the work at this cathedral is under the immediate superintendence of Mr. Gilbert Scott's clerk of works, Mr. Frater.

CHURSTON FERRERS.—A new Congregational Chapel has been opened in the hamlet of Galmpton, which is a part of the parish of Churston Ferrers, Devon. The architecture is in the Gothic style: length, 45ft.; breadth, 29ft.; height, 22ft. It is built of limestone. No contract was entered into, but the work has been carried out under the direction of the architect (the Rev. D. Davis, Dartmouth) by Mr. T. Lovell, of Dartmouth, and Mr. E. Narraway, of Brixham.

DAWLISH.—The new Independent Chapel, designed by Messrs. J. Tarring & Son, architects, of London and Torquay, is now complete. It consists of nave, chancel, vestries, organ chamber, lobbies, &c., with staircases leading to gallery. The principal front, facing the Strand, has a tower and spire 160ft. high. The style is Decorated, and the entire cost, exclusive of site, is about £2,000. The church is designed to seat 500 persons. The building has been carried out under the efficient superintendence of Mr. H. J. Newton, of the Torquay office, by the builder, Mr. J. L. Luscombe, of Torquay.

EAST ANSTEY.—On Advent Sunday the parish church of East Anstey, Devon, was reopened. The new structure (which in reality the church now is) is placed on the old foundation, the only actual addition to the ancient fabric consisting of a vestry, which is divided from the chancel by a wooden screen with movable panels, so that it may on special occasions be converted into a transept, and hence add materially to the accommodation afforded by the church. Various works connected with the restoration were carried out by Mr. James Wood, builder and contractor, of Lurley, near Tiverton, from the designs of Mr. E. Ashworth, of Exeter.

EASTON.—The parish church of Easton has been reopened. The building is in the Transition style, and possesses a very rich archway giving access to the nave, restored some years ago by Messrs. Newman & Sons. The recent alterations include a complete restoration of the circular apse internally. The chancel has been repaved with Minton's encaustic tiles, whilst the sanctuary has been furnished with a new oak table, a super altar in stone, and a reredos in encaustic work, charged with the emblems of the Evangelists, &c. There is a Gothic screen in oak dividing the chancel from the nave.

ELTHAM.—On Saturday the foundation stone of a church, to be dedicated to S. Peter, situated in the Eltham-road, Lee, was laid by the Lady Louisa Mills. The new building, which is to be Early Gothic in style, will be constructed of brick, with stone columns and window tracery. It will consist of a nave, north and south aisles, chancel, and organ chamber. The west end of the nave will terminate in a tower and spire, the basement of which will form the principal entrance. The cost of the church and part of the tower at present in progress will be £3,950, of which sum there is still about £2,000 to be raised. The structure will be erected from the designs of Messrs. Newman and Billing, architects, Southwark, by Messrs. Dove Brothers, of Islington.

HORDLE.—The laying of the corner stone of the new chancel of All Saints' Church, at Hordle, Hants, took place on Monday week. For some years past the church had shown signs of decay, and Mr. C. Giles, of Furnival's-inn, London, was requested to report upon it. His report brought before the porishioners the necessity of immediately taking steps for rebuilding the church, and a committee was appointed. A design, in the style of the twelfth century, was furnished by the architect, to be carried out in red brick, with facings and trimmings of Bath stone. Mr. Lander, of Burton, is the builder.

HOUGHTON CONQUEST.—Houghton Conquest Church was lately reopened, after restoration under the direction of Mr. George Gilbert Scott, R.A., at a cost of £3,000. The chancel, which had fallen into a condition of great neglect, has been furnished by the rector with a fine oak roof.

HULL.—On Monday week five foundation stones of a new Primitive Methodist Chapel were laid. The style of the building will be Gothic, the materials used being red bricks, with Ancaster stone dressings. Accommodation will be provided in the chapel for 800 persons, and there will be schoolrooms below. Mr. Musgrave is the architect, Mr. Robinson being the builder; and the total cost is estimated at £2,500.

IPSWICH.—Mr. R. M. Phipson has recently restored the church of S. Mary-le-Tower, Ipswich, and the enrichment of the stonework has just been completed by Mr. Phyffers under his direction. The western doorway, the south doorway, the corbels on which rest the springers of the nave roof, and the sedilia, are the principal portions of the building which have been treated.

LITTLE DEWCHURCH.—The parish church of S. David, Little Dewchurch, was reopened on Thursday the 1st inst., after restoration. The style is Early Decorated, and the church consists of nave, chancel, and west tower. The old roof timbers, previously hidden by a low plaster ceiling, have been cleared, the chancel arch rebuilt, the church reseated, and a new reredos erected. Mr. F. Preedy, of Baker-street, London, was the architect. The amount expended was £1,400.

March.—A new Baptist Chapel is now in course of erection at March, Isle of Ely, from plans by Mr. Usher, architect, of Bedford. Mr. William Hutchinson is the contractor.

Monmouthshire.—On Friday, December 2, Trinity Church, Cwmbran, Monmouthshire, was opened for Divine service, after having been closed for restoration. The contract was taken by Messrs. Cock Brothers, Newport, and carried out from designs and under the supervision of of Mr. E. A. Lansdowne, architect.

S. George's Chapel, Windsor.—The Queen last Friday visited the Chapel Royal of S. George, for the purpose of examining the elegant reredos recently erected at the east end of the choir. The reredos, which is of white and veined alabaster, was sculptured by Mr. Bernie Philips, the architect being Mr. G. G. Scott. Slender pilasters, with gilt capitals bearing small statuettes of angels holding swords and crosses, support handsomely carved canopies relieved with gold. The centre of the reredos is occupied by three large panels, that in the middle being a bas-relief, representing the Ascension of our Lord, the figure of Christ rising above a group of his disciples. The Saviour is surrounded by an oval *gloria*, gilt. The panels right and left of the middle one contain bas-reliefs of our Lord appearing to Mary and to his disciples, all the figures being finely and expressively carved. The four outer panels, two on each side of the central compartment, are each adorned with two beautifully-sculptured heads of angels, set in frames, richly ornamented with coloured marbles.

BUILDINGS.

Fremington.—A new national school at Fremington, North Devon, was opened on Wednesday week. The school is situated in the centre of the village, and is very substantially built. Its dimensions are 64ft. by 18ft., exclusive of a class-room, 16ft. by 30ft.; the usual offices are commodious, and the front of the building is surmounted by a bell turret. The architects are Messrs. Gould & Son, Mr. John West having executed the masonry, and Messrs. Isaacs & Ridge the carpentry.

Newcastle-on-Tyne. — The new block of school buildings (according to the local *Daily Chronicle*) in connection with Bath-lane Church, presents an imposing appearance now that the hoarding has been removed from Locke-street. The church with its well-defined spire, together with the schools with their elegant open turret, form one of the handsomest groups of architectural composition for religious and educational purposes in the town. The new schools are on an extensive scale, and the accommodation for class rooms and for other arrangements is in proportion. The architect of the original structure, Mr. Thomas Oliver, is also the architect for the new works.

Poole Wharfedale.—A new school-house is in course of erection in connection with the church of this village, from the designs and under the direction of Mr. Henry Walken, architect, of Leeds.

Scarborough.—The foundation stone of the New S. Martin's Grammar School, Scarborough, was laid on Tuesday week by the Archbishop of York. The building, which will front Ramshill-road, will be in the Gothic style, and will comprise schoolrooms and class-rooms for boys and girls, and a large lecture-hall above. Mr. G. F. Bodley, of London, is the architect, and Mr. Thomas Petch, of Scarborough, the contractor.

◆

Memorial Fountain, Glasgow. — The premium, £50, has been awarded to Mr. John Sellars, architect, Glasgow.

The Colosseum.—The last traces of this institution are about to disappear. Erected in 1824, it received much patronage from the last generation, and enjoyed a reputation for the gigantic pictures or panoramas exhibited there; but, after many vicissitudes, it ultimately succumbed to the more popular and central entertainments of modern times, and now its site is to be disposed of. It occupies about 81,000 square feet, possessing a frontage of about 300ft. to the Regent's-park and Albany-street.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

To Our Readers.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

Letters relating to advertisements and the ordinary business of the Paper should be addressed to the EDITOR, 31, TAVISTOCK STREET, COVENT GARDEN, W.C.

Advertisements for the current week must reach the office not later than 5 p.m on Thursday.

Received.—C. H. J., A. P. M., T. C. A. T., J. C. G., E. B., T. B. V., J. H. S., A. F. R., C. W. B., G. R., H. G. S., R. S. F., H. G. R.

P. Auld.—Can't say anything about sketch for title-page of Sketchbook without seeing it.

C. W. W.—Sketch of Athelstan not good enough.

E. Rake.—Your sketch of Grey Friars Tower will appear.

J. W. W.—The sketch was not good enough, like a great many others which have been returned lately.

Erratum.—The interior illustration in our last number was wrongly named. It should have been Lichfield Cathedral and not Ely Cathedral.

Correspondence.

LUMP-CONTRACTS IN GLASGOW.

(*To the Editor of the* Building News.)

Sir,—It is encouraging to see by the useful letter of your Glasgow correspondent that there is nothing original, as I had thought, in my scheme for a substitute for the present unsatisfactory system of contracting. His letter quite relieves me from the necessity of replying to the sneer of another correspondent. A scheme that will secure the assent of canny clients north of the Tweed is not so very impracticable, or even absurd, as "J. P. S." considers it. The question for architects to discuss is, not what clients and committees will sanction off-hand, but what architects ought fairly to do, and how they ought fairly to practise. Clients will assent to anything reasonable we can be found *to agree about*. They do not respect us for the subserviency that impels us to idly yield to them the cue we ought to wield ourselves. I, for one Southron, should be glad of some more detailed description of the Glasgow system of tendering.—I am, Sir, &c.

Solomon Set-square.

THE INSTITUTE ON ITS TRIAL.

Sir,—If your correspondent "J. P. S." really desires, as I do, to see the Institute flourish—not as a mere architectural society, but as a *focus* of union and authority for all practising architects—he will rather deal with the grave facts I have adduced from the President's own address than denounce me because I am young, or, as he says, a mere tyro in quest of *eclat*, and write anonymously. The complaint I make is a very serious one: its topic is the professional insignificance of the Institute. How does he meet it? By abusing its critics, and intimating to the vast body of architects out of its small fold that it is an obstructive "cow" on its line of triumph, to be in time ridden down by the drivers of the Institute engine. If by this imperative style of writing every decent English architect can be terrified into membership, I, for one, shall rejoice. I am, however, tired of waiting any longer for the operation. I see no prospect of it. *Hinc illæ lachrymæ.*

I have every respect for individual members of the Institute. I believe it to be a very charming and agreeable society, where very good papers are read, very nicely printed and very quickly circulated. I can't say that I hold it to be downright profane, as evidently does "J. P. S.," to speak slightly of the Institute; but I do quite concur with him in thinking it too bad—nay, absolutely silly—of your contemporary to question the hilarity of the Conduit-street executive. It is almost as silly as to write angrily about it. All these, and other matters he, with another correspondent, speaks of, are mere trifles in presence of the fact that in 1870, when English architects are being trodden down by the public in sheer ignorance, the Institute has not, and is not likely to have, their adhesion. It is ignored on all sides, save here and there by those irrepressible gentlemen who advertise themselves here, there, and everywhere as F.R.I.B.A. or A.R.I.B.A. I fear it was one of these that in a contemporary told us, a week or two ago we were all nobodies, or next to it, if we did'nt hail from the Institute (!). I protest against this sort of thing. If it were based, like a university B.A. degree, on either a great, or even a little, "go," I would bow to it; but we all know it isn't, and that no good can by possibility accrue to the general body of architects by the Institute's continuance as at present constituted.

I trust you will accept my old initials. I don't see why "J. P. S." objects to them. Surely, Mr. Editor, an anonymous "W. Y." is quite as harmless as an anonymous "J. P. S.," especially on a question absolutely impersonal.—I am, Sir, &c.

W. Y.

THE AIR AND HEALTH QUESTION AND ARCHITECTS.

Sir,—If "J. G." will look again at the letter he mentions (p. 401) he will not find any promise to show him "unbloody buildings"—the phrase does not occur—but, on the contrary, I wrote that I did "not know an unbloody one in modern England;" that probably I should "not find *one* made for *human habitation* in his county," wherever that might be, and that "probably chance has not evolved a dozen, if any."

A little less haste, then, in answering the letter before he had read it would have saved him the guesses that I "probably" referred to "churches or unceiled attics or garrets," it being there written as plainly as I could, and even italicised, that the "chambers" and "structures" to be adduced were not "buildings," nor "for *human habitation*."

I will redeem my promise, but first, it might have occurred, I think, to an average mind, that there may possibly be chambers and structures not admitting breathers within them, and yet having exactly identical requirements as to air and weather, as if they were to be dwelt in. They may be "variously sized and designed," and "cheaply or expensively constructed;" but all required to fulfil the conditions of excluding rain and wind—perhaps even better than "churches or garrets" usually at present do, and yet promoting the constant outflow of foul and light air, and inflow of fresh, and, as I said, the outflow not only of so *many* cubic feet per minute, but of *the right* cubic feet, the particular ones fouled.

Now to see some dozens or hundreds of these works of true design then, so perfectly and universally successful in fulfilling the exact conditions wherein all your Smirkes, and Barrys, and Royal Institutes of British "Architects" (save the mark!) with John Bull's revenues to play and blunder and botch with *ad libitum*, so utterly and continually fail—to see, I say, these marvels of art, "J. G." has but to visit, at the nearest town, the largest manufactory or store of lanterns—carriage lanterns, police lanterns, magic lanterns, street gas lamps, or any sort, however rough or finished, big or little, from a lighthouse top to a "bull's-eye." All alike require the exclusion of rain and wind, the free inflow of fresh air to feed the flame, and *right* outflow of *all* that it fouls, without allowing mixture or waste of force. In short, they require exactly what a *perfect* dwelling or meeting room requires; but, unlike these or any work of your "architects," they *fulfil* what is required. They do it, simply *do* it—not better or worse; there is no *more* or *less* about a matter of totality. A chamber to contain a lamp, or to contain breathers, is either rightly or wrongly designed, either self-ventilative or non-ventilative—that is, in the latter case, noxious or innoxious, bloody or unbloody. In the case of the lanterns, either *some* of the burnt air may be hindered from exit and mingled with the fresh—as would *always* happen if "architects" or chance made them—or *none* may be so hindered, which is always the actual case. Proof: Turn any one of them upside down, and try with a heavy instead of a light fluid. Fill the inverted chamber with water, and all will run out. Not a drop will be caught and retained by any malformation, or even spread by too level a piece of surface. There is entire drainage in this position; therefore, in the position of use, unchecked *upward* drainage, utilizing all the hot air's ascensional force for its instant removal, allowing none to cool, be mingled, diffused, or a second time reach the flame. You see, the details of a common craft, even the tinman's lantern-making, are a widely different thing from "*architects*" details; very unlike "J. G.'s" unceiled or ceiled "churches or garrets." There is all the difference between work of *design* and of *chance*.

And that brings us to the main question that I promised to answer and make "very plain:"—What makes this difference between the tinman's work and the Royal British Architect's? *Why* is there *no* sixpenny lantern in England *wrongly* or *imperfectly* formed as to its chief functions, and *no* church, or palace, or room, in the Houses of Parliament or elsewhere, *rightly* so? Is it the tinman's greater science and learning that causes this? Yes, sir. It is his possession of this important piece of learning—that *an unventilated lantern is unsaleable*. Therein lies the whole difference. You have taught your tinman this, but you have taught your "architect" quite otherwise—that such rubbish as a Palace of Westminster is very saleable. You have, in every case, what you pay for; you arrange to pay tinman according to efficiency of the things produced, and you get what you paid for. You arrange to pay Royal British Architects according to *outlay*. Have you not got also here what you pay for?

What else, O British wisdom, would you have? Have you ever paid for anything else?

But pursue the necessary results a step farther. Let a man of average mind and decency bethink himself a moment what it must be to plan for the first time, and advise for the first time another's expenditure of other men's labour, on the understanding of being paid a "percentage on the outlay,"—on that very outlay that you are to direct, so that every economy is to bring you a loss, and every waste a gain! Nay, to be paid for *nothing else*, for no doing whatever of yours, but, contrariwise, for the amount of other men's work caused to be spent. Let him only try to figure, if he can, the manner of man it must take,—the calibre and quality of mind to accept this position,—nay, to do it contentedly; and not only be thus paid once as a shift, but proceed to do it *again* a second time! Yea, further, to regard it as quite in the nature of things, a business, a regular way of living! And if a reader can dive into such an abyss, this is the manner of mind, observe, from which British wisdom asks planning of buildings,—yea, expects great works!—works the most preeminently calling for dignity of mind, and for *invention* of every kind, yea, the most godlike artifice and co-ordinance, from men that collectively publish that the above "appears the best mode" of paying them "that can be *devised!*"—and stand up in a body of hundreds, with the M.P. for Bath at their head, to proclaim themselves incapable of *devising* a way of being paid for their own work.

Returning, then, to our lantern question, we find means of making the answer plainer. Between the tinman's work and the "architect's" we find this immense fundamental difference underlying and amply accounting for all others. The lanterns are the work of *ordinary* or *average* British mind; but the churches and palaces not so. Our system is so arranged as to get its architecture exclusively from a far lower stratum, from nothing approaching average English humanity, but the last siftings thereof through a sieve that, if you do but look at the thing a moment, can only let the smallest and lowest order of mind pass through. What but the already dullest and basest quality of mind and soul do you suppose can go through this percentage-taking sieve, so as to undergo the further progressive degradation and defilement the practice imposes? All our great-work-designing since Wren, you see, is demonstrably that of an exceptionally low caste of English soul, not merely the lowest born, but artificially-degraded lower, morally and intellectually. This accounts for all the contrast between this and common arts, and is no theory observe, but the true cause as plainly as any cause of any effect in the world. Will any man attempt to dispute that the creature which has been paid percentage on an outlay is necessarily a baser—either originally baser, or a more fallen order of creature, than one which has taken none, and that he who has taken it twice is again of a more degraded rank of being than had he stopped at taking it once? And can we not see, if we notice any bit of work more approaching decency or common sense, amid the unutterable vileness that rises around us, and if we inquire into its authorship, that it is always some young architect's *first* work; none ever producing a second, or at least no third, distinguishable from the general dung-heap?

When another, then, of your correspondents, "H. A. L." (Intercom. 2023, p. 420) coolly wishes me, "omitting any attacks on architects," to 'enable some one to earn an extra percentage," he somewhat mistakes his customer. "Omitting attacks on architects," forsooth, to teach protection from lightning! Why, what is lightning-damage to percentagers' havoc? What if there were *no* conductors, and lightning were to topple down every stone still left upon another of the few poor remnants of our forefathers' lovely handiwork that, being in out-of-the-way nooks, have escaped this generation of percentage-hunters' vigilance? Would lightning be as one of them, and "break down all the carved work thereof with axes and hammers?' Would lightning Scottize the rest of our antiquities, and forge and set up Victorian shams in their place? Would not lightning, hail, earthquake, or any elemental forces be, as Mr. Ruskin said twenty years ago, welcome friends indeed, if kind heaven by their means were to save some noble thing from "restoration," some pearl from these nineteenth century destroyers, and mother earth give it honourable grave? For is not mankind fifty times richer, as he said, by the possession of buried Nineveh than of rebuilt Milan? Would not all after generations of Anglo-Saxondom, and of all mankind, prefer and be more blest by some Early English stones under the kindly soil, than all your lying Victorian forgeries of them on its surface?

"H. A. L." might as well ask Gambetta, just now, to attend to lightning-conductors, "omitting attacks on" Prussians, as expect I am going to abstain from attacks on my country's destroyers, that in one single reign have all but consummated the utter clearance of our cradle-land of every fragment of ancestral handiwork that was precious or noble, unique and inimitable, monumental or truly historic; everything that distinguished a land of a thousand years' story from Australia; these men that in their single generation have coined into their percentage more of my race's jewels than I believe civil wars and neglect of all the three centuries before them had destroyed, and now all but disinherited our scattered race, for all coming time, of every link with their noble past; yea, nearly made Anglo-Saxondom as recordless as Dyaks or Maories, and who, unless soon checked, will have quite done so; unless we can rid our land of them, even sooner perhaps than France may be rid of Prussians!

And to please "H. A. L.," forsooth, I am to treat of these my nation's most insidious wasters without "attacks on" them; these enemies whose inglorious names I predict their own grandchildren will never dare to bear; for though percentage may, I hope, not have many days more—perhaps be now in its last months—this may be the last December there will be any to be gotten, yet all concerned be sure its name and memory will be kept, while its vile results are in the way—kept to be cursed and spit upon as long as English tongue endures. No attacks, indeed! Why it is quite disgusting enough to have to mention, to look at this Augean stable, and touch with tongs this "honourable profession." Does "H. A. L." suppose any decent person would do so but for duty, and therefore to attack?—I am, &c.,

Dec. 5. E. L. G.

EALING SEWAGE WORKS.

Sir,—In your impression of the 2nd December, you give me the credit of the system adopted for the purification of the Ealing sewage. It would be very unfair to Mr. Jones, the engineer of the works, if I did not ask you to have the goodness to correct this statement. All that has been done for the Ealing works through my instrumentality is this: I suggested to Mr. Jones a better plan than that previously in use; but to Mr. Jones alone the credit is due—not only of carrying out the Ealing works, which are considered a model for imitation, but also for having carried them on towards perfection by the addition of many admirable mechanical and other arrangements.

My suggestion was, that instead of using lime only, which does its work very imperfectly, or metallic salts, which are very costly, it would be as well to use lime first, to do that for which it is admirably adapted—viz., to precipitate the phosphates and carbonates, and, subsequently, by another operation to fix the sulphuretted hydrogen with a comparatively small quantity of perchloride or some other salt of iron. This idea Mr. Jones has very successfully dealt with, and he has supplemented it by mechanical arrangements which will go far towards removing the organic compounds which the chemicals fail to lay hold of.

I may state that I am convinced that Mr. Jones's works quite justify the very high opinion expressed of them by Professor Way, and I agree with him that the combined system of precipitation and filtration will in all probability bring the effluent water to a sufficient state of purity to enter the river,—I am, &c.,

Henry Y. D. Scott, Lieut-Col. R.E.

Ealing, December 5.

Intercommunication.

QUESTIONS.

[2061] RATEABLE BUILDINGS.—I shall feel obliged if some of the readers of the Building News will say whether a work-shop built of wood, in framework all round, and independent of the ground, covered with feather-edge boards, something like the contractors' sheds seen in the streets, except the floor and wheels, would be considered rateable. An early reply will oblige.—Samuel Lexicon.

[2062] ORIGIN OF PULPITS.—I should be glad through your "Intercommunication" column to know the origin of pulpits in our churches, as some say that they are not of older date than the Reformation.—S. H.

[2063] DRYING OF WOOD.—In the short notice you give in your last number under this head there is no allusion to the method of drying by immersion, which is I believe resorted to in the case of large timbers or flitches; will some of your readers give their experience of this method? Steam is sometimes employed, but oh! what will joiners and cabinet-makers say to drying their fine woods in sand? I can bear witness to the bad effect of excessive drying. What has become of the famous Desiccating Company?—Z.

[2064] EMPLOYERS AND CLERK OF WORKS.—An employer having arranged to carry out a building according to the plans and specifications of an architect, the architect being at a distance from the locality, and to be retained and paid his full percentage on the work, has the employer the right to appoint a clerk of works to carry out the work to the plans, &c., of the said architect? Farther, has the architect a right to object to a clerk of works so appointed? Answers or information from any of your correspondents having experience in the foregoing subject will oblige the inquirer, and most likely throw a little light on an obscure matter, to the edification of your readers.—C. North.

[2065] WATERPROOF ROOF.—I shall be obliged by any information on the following difficulty. A building rather exposed is roofed with double Roman tiles; the pitch is about 30°. As the wet drove in during gushy winds, I pointed every joint carefully with cement, and cement washed all the roof. To a great extent this remedied the evil, yet in driving rains it comes in in a few places and seems to defy the most careful attempts to stop it. Stripping and slating (with felt under) would entail considerable expense. What can be done to make it perfectly secure? It appears to be as close and sound as possible, and the minute crevices or fractures in the stopping are hardly discernable. An early reply will much oblige.—Triangle.

REPLIES.

[2023] LIGHTNING CONDUCTORS.—In answer to "H. A. B.," I thought my first reply had begun by stating what Sir W. S. Harris had settled as the least "sufficient capacity," both of iron and copper conductors. In his work on "Thunderstorms," the last English authority on the matter, though of 1827, he relates, at p. 109, a case of a ½in. iron rod being fused for some inches; at p. 111, one of a copper chain whose links were of rod ¼in. diameter "completely melted," at Rio Janiero; but he rejects the inference of Wilson, in *Philosophical Transactions*, 1773, from an examination of the conductors of S. Paul's, London, that there were marks of one having been "considerably hot, if not absolutely red;" and a few other stories of fusion of thicker iron, and concludes, p. 113, that there is no case of a copper rod of ½in. diameter being "fairly fused"; and finally, that a ¾in. rod of copper might be considered safe in any discharge of which there has been human experience. Now he ranks the conductivities of the common metals, p. 99, in the ratios of copper 12, zinc 4, iron 2·4, tin 2, lead 1; so that if we reckon the smallest cap copper conductor to weigh a pound per foot, the smallest of wrought iron should be 5lb. per foot, of zinc more than 3, and of lead more than 12; as these latter must not be in danger of being raised to their fusing points, which are lower than the red heat, the point of danger from iron and copper. Of the conductivity of cast-iron I have not found any measure. If "H. A. B." can get from "H. A. L." soft copper in the form of ribands, tested by an electrician, and stamped with some government guarantee of its conductivity, then, if they be as pure as the specimens "H. A. L." speaks of, half the above quantity may be saved. The latter gentleman will find in Harris's later pamphlet, 1847, p. 60, that by his statistics in one case of damage to ships, out of six (by bifurcating flashes), *yards* have been struck as well as masts,—in one case of 200 "the extremity of a yard arm only; and in p. 59, that one flash out of fifty has even struck a prominent part of the *hull* directly, and no spar. He gives a lithograph of the *Dido*, which had the mainmast protected, being struck by a forked flash on the vane-spindle and end of royal-yard, which latter was demolished; and in his list of cases, No. 218, the *Windsor Castle*, had the foremast and foreyard struck at once.—E. L. G.

[2038] ROOFS.—The best way to make hipped roofs watertight without lead or ridging is to make a true mitre with the slates; every course to have a small layer of putty underneath the mitre coloured with lamp black or slate dust to the same colour of slates used, and allow it to have the same lap as slates. With this principle and good workmanship you will have a firm, neat, and watertight job.—W. L. K.

[2038] ROOFS.—For short lengths of hips I have seen slates cut out of the solid to the proper angle and pitch, which at once makes a watertight job, and dispenses with lead flushings or ridge stones, the only objection to this process being the extra cost. It is evident that "J. G.'s" solution given in your last number would not prevent the rain entering the roof which lead flushing is supposed to do.—Prism.

[2351] ARCHITECTS AND THEIR PUPILS.—Architects usually give their assistants fourteen consecutive days holiday, if convenient, in one of the summer months, but the pay for overtime when upon competition or other work should make no difference to this rule. If an assistant is ill for any length of time I should say he could hardly expect to be paid in full, although it is hard for him if he depend on his salary for a living and only receive a portion. It all depends on the circumstances of the case, and also what agreement is entered upon.—A. A.

◆

WATER SUPPLY AND SANITARY MATTERS.

Barnard Castle.—Mr. Morgan, who recently held an inquiry into the nature and extent of the Barnard Castle water supply, has made his report. He recommends that the Barnard Castle Board of Health should at once take steps to secure an increased supply, and calls attention to the desirability of at once dealing with the sewage of the town, which now discharges itself into the Tees, to the detriment of Darlington and other places below Barnard Castle.

Cambridge.—Application is being made by the Commissioners of Cambridge to Parliament for power to construct additional sewers, &c., according to drawings prepared by Mr. Bazalgette, C.E., as the river Cam is again getting filled up by the sewage and slush washed down the drains from off the macadamised roads (?) which the town of Cambridge has lately launched out in, much to the annoyance of those who like clean boots and dislike being bespattered with showers of mud from passing carriages.

◆

STAINED GLASS.

Biggleswade.—The parish church of S. Andrew, Biggleswade, has lately been restored, and the architects, Messrs. W. G. Habershon and Pite, have presented a handseme stained glass window, representing "Christ Healing the Leper."

Lichfield.—A stained glass memorial window, to the memory of the late Mrs. Spode, of Hawksyard Park, has just been placed in the cathedral. There are three principal lights, the centre being our Saviour on the Cross, the right the figure of S. Helena, and the left the Resurrection. The principal subject in the lower part of the window is the Temptation, and the upper part is filled with a variety of subjects, embellished with rich tracery and presenting considerable beauty of design. The work is from Hardman's, of Birmingham.

◇

LAND AND BUILDING SOCIETIES.

Leeds Provincial Building and Investment Society.—The twenty-first annual meeting of the members of this society was held last week. The cash account showed an income from Leeds of £65,741 12s., and from the other places of £23,597 3s. 9½d. The total income is £110,587 11s. 9d., and the total expenses, including salaries, is £890 16s. 8½d. The stock account amounts to £177,486 4s. 4½d. Last year's balance was £1,119 1s. 11d., and the bonuses apportioned were £337 10s. This left a net balance from last year of £781 11s. 11d., and the present year's balance is £406 2s. 6½d., which, added to the foregoing sum, gives a total of £1,187 14s. 5½d.

Exeter.—The twenty-first annual general meeting of the Provident Permanent Benefit Building, Investment, and Loan Society was held on Monday week. The number of shares issued during the year ended the 21st Oct., 1870, was 331, making a total of 4710 shares. The audited balance sheet shows the society's transactions in the past financial year as follows:—Amount received on shares, £5,386 18s. 6d.; deposits, £5,849 5s. 1d.; lent on mortgages, £12,096 1s. 11d. and the total amount of receipts and payments, £31,384 2s. 5d.

Guardian Permanent Building Society.—The annual meeting of shareholders in this society was held at the Athenæum, Bristol, on Monday week, Mr. Whereat presiding. The directors' report showed that the cash receipts for the year amounted to £27,744 11s. 7d., and that the finances of the society were in a very healthy and satisfactory condition. In moving the adoption of the report, the chairman called the attention of the members to the fact that during the nine years the society had been formed no loss whatever had been sustained, and expressed his belief that the triennial investigation of the affairs of the society, now in progress, would show a very satisfactory profit to be divided among the shareholders.

◆

LEGAL INTELLIGENCE.

Is a Tenant Liable for Damages done to a House? At the Altrincham County Court on the 24th ult., before Mr. J. W. Harden, judge, Mr. Wordyeat, builder, sued Mr. Macdonald for £7 damage to a house of which he was tenant. It appeared that defendant entered on his tenancy in 1869, and left about a year afterwards, the house being considerably damaged, the cost of repairing and redecorating being £20. It was urged on behalf of defendant that there was only the ordinary damage of a year's tenancy. His honour thought differently, and gave a verdict for the plaintiff for £5 1s.

Master and Apprentice.—The Barnard Castle bench of magistrates, on Wednesday week, heard an application from Jervis Watson Godley, who was some time ago bound apprentice to Ralph Bell, of Middleton-in-Teesdale, joiner, and on the 7th ult., Mr. Bell having taken a public house had the lad to live with him there. This being contrary to the tenor of the indenture and to the feelings of the lad and his father, a complaint was laid before a magistrate, and a summons served. The bench made an order for the defendant to provide another lodging for the lad or the indenture to be cancelled.

Sale by Tender.—The case of Spencer v. Harding, in the Common Pleas, was argued on demurrer to the declaration, which stated that the defendants issued to the plaintiffs and other persons engaged in the wholesale trade a circular stating: "We are instructed to offer to the wholesale trade for sale by tender, the stock of Messrs. G. Eilbeck & Co., amounting, as per stock book, to £2,503 13s. 1d., and which will be sold at a discount in one lot. Payment to be made in cash." The court said the circular is a mere invitation to the public to send in tenders; there is no promise, either express or implied, to accept the highest tender. There is no statement that the stock is to be sold "without reserve," or even at an alarming sacrifice; on the contrary, there is the special circumstance that the stock is to be sold "at a discount" (which means some reasonable deduction), which entirely excludes all notions of an intention to accept the highest tender, whatever it may be. Judgment was given for the defendant.

◆

Our Office Table.

Recovery of Mr. G. G. Scott.—It will be gratifying to the friends of Mr. Gilbert Scott to know that his health is improving. His progress recently has been such that he has been enabled to return to his own residence at Rooksnest, Surrey, and his medical attendants hope that a few months of rest will do much to restore him to his usual health.

Scaffold Accident at Middleton-in-Teesdale.—At the new Wesleyan Chapel in course of erection at Middleton an accident happened the other day which proved all but fatal. The masons were engaged in finishing the walling above the window-heads, the walls being full height. One of the labourers had overweighted the scaffold, when it fell, and a man who was standing upon it just had time to seize hold of the top of the wall. He held on in this dangerous position for nearly five minutes, when he was rescued by some of his fellow-workmen. Had he slipped his hold, or the stones given way, he would have fallen a height of 50ft., and probably have been killed on the spot.

The Conservative Land Society.—The eighteenth annual meeting was held on Tuesday, the 6th inst., at the Norfolk-street offices, Viscount Ranelagh in the chair. The annual report of the executive committee stated that the receipts for the year were £133,276 15s. 11d., and the grand totals to Michaelmas, 1870, £1,583,359 15s. 2d. The last share number issued to Michaelmas, 1870, was No. 34,756, which, at £50 per share, represents a subscribed capital of £1,737,800, the total withdrawals being £399,971 3s. 9d. After leaving the reserve or surplus fund at £10,500 (exclusive of office premises and furniture account, which now stands at the present value of £2,533 10s. 6d.) the report adds that every payment on the shares on the register will realise five and a half per cent. per annum for the present year. The following members of the board who retired by rotation were re-elected:—The Hon. Robert Bourke, M.P., Sir Lawrence Palk, Bart., M.P., Colonel Augustus Meyrick, and Newnham Winstanley, Esq. The report referred to the success of the system of combined action, as proved by the readiness displayed by the members in the taking of the shares of the United Land Company (Limited) on their third issue.

Cardiff.—The annual meeting of the Schools of Science and Art was held on Wednesday week, when the prizes awarded to the successful students in the recent examinations were presented to them. Mr. G. T. Clark presided, and delivered a long address on the advantages of Art training.

Proposed Public Hall for Harrow.—A provisional committee has been formed having for its object the establishment of a joint-stock company for the erection of a new public hall at Harrow. A site in the High-street, nearly opposite to the King's Head Hotel, has been secured on advantageous terms at a ground rent, with the option of purchasing the freehold within a period of seven years. The plans of the building (prepared by Messrs. Habershon & Brock, architects) show a handsome elevation and a suitable design. The following will form its principal features:—On the ground floor, front and back offices, with spacious ware-rooms in the rear, for the purpose of letting. A valuable space, suitable for offices or a shop, or for a fire-engine house, should it eventually be required for the latter purpose. On the first floor, the main hall, with gallery, capable of seating 600 persons, orchestra, platform, two retiring rooms, ladies' and gentlemen's cloak rooms, and also a refreshment or club room. On the second floor, four rooms for the use of an attendant, &c. The estimated cost of the building, including architect's charges for plans and superintendence, is £2,000, which it is proposed to raise in 2,000 shares of £1 each.

Stone Waterproofing.—At the recommendation of Professor Abel, chemist to the War Department, the process invented by Messrs. Gay & Co., of Alton, Hants, for waterproofing and preserving stone and other buildings, is, by the order of the Office of Works, to be applied to the decayed stonework of the Houses of Parliament.

Lead Poisoning.—Professor F. Crace Calvert, of Manchester, says:—"Great numbers of private houses have a leaden cistern heated by means of a continuous current of hot water, fed by a boiler placed behind the kitchen range, on the ground floor. The cooled water from the cistern returning to the boiler is of course charged with all the lead dissolved from it, and as the occupiers of these houses are either not aware of the action of water on lead, or do not reflect that the water which they take from the kitchen range for domestic purposes has circulated through the cistern above, it is not surprising that many of them fall victims to lead poisoning."

Prospective Growth of Timber on the Western Prairies.—An American agriculturist, who has recently travelled in the treeless regions of the "Far West," mentions facts which tend to weaken, if not to overturn, the theories of those who hold that the great plains can never be made to bear timber. Although the trees that do grow naturally in those parts are so stunted and distorted as to lead to the conclusion that the climate is utterly opposed to the growth of anything better, yet plantations have been made in Eastern Kansas which are as flourishing as could be desired; a ten years' growth having produced handsome trees 50ft. in height. The most valuable among these are oak, hickory, and black walnut. It is found, too, that fruit trees, including the grape-vine, thrive and yield abundantly in sheltered situations. Is this to be regarded as the beginning of planting operations which, in course of years, will cover all the wild wastes with timber up to the foot of the Rocky Mountains? What a grand compensation, remarks the *Athenæum*, that would be for the loss of the forests which are fast falling before the axe in the Middle States!

◆

MEETINGS FOR THE ENSUING WEEK.

Monday.—*Institution of Surveyors.*—"On the Valuation of Annuities and Reversions dependent upon terms of certain duration." By Mr. William Matthews. 8 p.m.
Society of Arts.—(Cantor Lectures.) "On Artists' Colours and Pigments." Lecture IV. By F. S. Barff, Esq., M.A. 8 p.m.
Tuesday.—*Institution of Civil Engineers..*—8 p.m.
Wednesday.—*Society of Arts.*—"On a new Method of Producing Durable Mural Paintings by Fictile Vitrification." By Mr. Alan S. Cole. 8 p.m.
Friday.—*Architectural Association.*—"On the Arrangement and Ventilation of Hospitals." By Mr. S. Salter, A.R.I.B.A. 7.30 p.m.

◆

Chips.

A new picture, by Cima da Conegliano, has been added to the National Gallery, and numbered 816; it represents the "Incredulity of S. Thomas."

Workmen are now engaged in making preparations for the planting of trees along the northern side of the roadway of the Victoria Embankment.

A new national schoolroom is about to be built at Georgenympton, North Devon.

It has been resolved to greatly enlarge the Royal Ilfracombe Hotel, Ilfracombe.

The fine old parish church of Ilfracombe, North Devon, narrowly escaped being destroyed by fire on Sunday week, owing to a defect in the gasfittings.

On Wednesday week the foundation stone of new schools for the parish of All Saints, Hull, was laid by Sir John Walsham.

It is contemplated to erect a new Wesleyan Chapel in Darlington, capable of accommodating 1,400 persons. The chapel erected six or seven years ago at the north end of the town is proposed to be used for school purposes.

THE BUILDING NEWS.

LONDON, FRIDAY, DECEMBER 16, 1870.

EXPRESSION IN BUTTRESS DESIGN.

TO say what an architect makes of his buttresses is to give no bad measure of his power. For one man who can design a buttress half a dozen might be found to design a tracery window. And this is especially the case with beginners. Naturally enough, what is most ornamental catches their attention first. They pick out the plums from a design, and think how nice a design would be if it were all plums; and the brilliant idea flashes upon them, "Why not make a design so?" Why allow anything in a building that is not "pretty"? Why not put gablets and pinnacles, tracery and panelling, carving and coloured patterns all over everything? Why not live on plums embedded in sugar? We might answer, "Try it." But fortunately there is no need for so desperate a remedy. Our hypothetical student is not obliged to make an experiment on the subject in bricks and mortar,—materials which have an unpleasant sort of durability when experiments in them fail. Other people have kindly saved him the trouble; have tried, and are still trying, his own idea. All he need do is to go and look at their work. If, on mature consideration, he likes it, it will be time enough to follow in the track; if he does not, there may yet be some hope for him as an architect. Where he can find examples it is hardly necessary to say. Chapel Gothic supplies plenty in one quarter, recent street architecture plenty in another. Mr. Ruskin calls the practice in question "the fault of all young artists." If this be so, some of our most antiquated designers can boast of one particular, at least, in which they never grow any older. To most men, however, time brings the conviction that the wholesome is better than the sweet—that nobleness of expression is better than inane prettiness. They learn to value most what will bear looking at longest, not what has most of attraction at first. They grow more critical about the substances of things—less easily caught by the baits on their surface. They come, in architectural matters, to insist more on breadth—on visible power—on mass of light and shade—on all the things by which, in some mysterious way, the artist puts his feelings into his work and makes it transmit those feelings to others. They thus come to study the features which are of most service in doing this. Unattractive as they once seemed, they learn by degrees their value. By attempts to do without them, perhaps, if in no other way, their high importance becomes manifest. The attention is turned to design as well as to decoration—to structural details as well as to tracery and carving. And looking on these things in quite another light from the first one, it is asked, not only which of their varieties has most beauty of form, but what special character and expression does each variety contain. And thus men come at last to judge of architectural details as a composer may judge of musical chords; not always choosing the smoothest or sweetest, but always that which contributes most to the grand result he aims at. They look on each design as a separate whole—as a whole with a character and expression peculiar to itself; and they find that in bringing out this special character many a detail may be precious that seemed by itself only ugly or useless.

What we now wish to insist on is the importance of this individuality in architectural works, and the value of buttresses, amongst other features, in producing it. No one, we hope, will think we are advocating the use of them where they are structurally uncalled for. In such a case their very absence may produce an individuality of its own—and a marked one. But supposing them to be wanted, it is interesting to see how many shades of character may be brought out by difference of treatment. Take half a dozen modern churches in which the buttress plays a conspicuous part. There is Mr. Pugin's at Dadizeele—light, graceful, and elegant. The buttresses are slender and tall, diminishing considerably as they rise, and planned in their upper part with many lines and angles. There is Mr. White's at Highbury, broad and massive, naive and quaint in feeling: a sort of design that is not likely to please the multitude, and that must be incomprehensible to those who think architecture begins and ends in "prettiness." Here the buttresses are deep and plain; there is not a moulding or a projecting drip from top to bottom. They are built of brick, and they are designed for it. But they are designed, too, to harmonize with the rest of the church: to aid and intensify its strong and severe expressions. Then there is Mr. Street's Memorial Church at Constantinople, equally strong and severe in style, but not equally quaint. It is very simple,—but its simplicity is a studied and refined one. It has little detail of any kind, but what little it has is beautiful. It shows something of that power which comes to every true artist, whether poet, painter, or architect, by prolonged experience, the power of making much out of small materials. A few careless-looking splashes of colour, a few short words of daily speech, or a few arches and buttresses, as the case may be; and there is a poem, a picture, a church. It looks very easy, until you try it. Then you discover where the magic lay. It was not at all in the materials, it was entirely in the putting together of them. Pull them apart, and the charm vanishes; it is startling to see with what common things the enchanted palace was built. Here, in this Constantinople church, half the effect is due to some of the plainest of buttresses. But their profile, made up by skilfully placed offsets into a general convexity of outline, exactly suits their office. Anything more elaborate would have marred the general harmony: would have made the rest look meagre and poor. Far otherwise is it at Mr. Goldie's church at York. Here, beside one of the richest west doorways in the kingdom,—beside cornices, and arcades, and carving—such buttresses as those at the Memorial Church would have been out of place. They are pitched in far too low a key to suit a design on which the great resources of architectural detail have been lavished. Hence, in this case, we find them banded and pinnacled, with gablets on their slopes and shafts in their angles, and in the upper story of the tower it was felt that even so they were not striking enough; and the architect has gone back to Romanesque traditions, and actually finished them with columns weathered off above the capital. The expedient is perhaps scarcely to be commended: but at any rate it preserves harmony and keeps up the richness of the buttress where richness is most needed. Mr. Withers's church at Brussels has far less of the pomp of art about it. Its decoration is not so positive or conspicuous. But the proportions of its tower are as good or better than those of Mr. Goldie's, and its tower buttresses contribute still more to the effect than do those of his church. Their type is perhaps rather German than English: they diminish by a great number of slight offsets: the weatherings are all alike, but the spaces between them become shorter towards the upper part. Nothing can be simpler, and yet this natural idea of lessening the stages as they rise has a peculiar and not ungraceful look. It suggests the notion of something growing vigorously upwards, like a young tree or a strong shoot of bamboo. The same type may be seen at Noyon Cathedral, at S. Cross, Breslau, and elsewhere, and its expression is so marked that when once observed it can hardly be forgotten. Mr. Brooks's church of S. Michael, Shoreditch, with which we may finish the list, makes a very different impression from either of the two last. The design for its tower (which we believe only exists at present on paper) derives a peculiar character from the number of narrow buttresses in its belfry story. This feature by itself is a good one; but the heavy square roof which caps it strikes us as somewhat too plain to be quite in keeping. The buttresses at the west end of the nave, arched over to carry octagonal turrets, are as successful as any part of the design.

To analyse the way in which all these different shades of expression are produced, would be the subject for a book rather than an article. Many of them depend on variations so slight that it would be difficult to explain them in writing. The rudest sketch in such cases is worth more than pages of description, for the position of a weathering, the thickness of a moulding, may alter the whole result. Rough as it looks, the profile of a buttress needs almost as careful drawing as the profile of a face. It is almost as soon changed, and as soon spoiled. We may note that in good examples of early date there is often a general roundness of contour, just as in late work there is an opposite tendency to hollowness. In the former, it commonly happens that the upper slopes are the flattest in pitch, and that the successive offsets become steeper as they get lower down. In certain examples there is even an angle in the upper weathering itself, like that in a Mansard roof, but more commonly a change in the rake takes place at each or at several of the points where the projection is increased. Some buttresses, again, have bold mouldings where the slopes overhang: of these there is a fine instance at S. Martin's, Laon. In others, the slopes do not overhang at all, but join the upright faces by a mere arris. And in yet others, there are no slopes, but there are numerous strings and cornices instead, and a little offset is made beneath each of these. The use of gablets instead of weatherings is so common as hardly to require notice. This, however, is an expedient which best befits an elaborate style, and we have seen more than enough of it lately. It is a pet form in the lowest class of modern work—the class whose ideal church is as clumsy as a barn, but as rich as a cathedral. In the capping of buttresses, many other shapes are found besides the plain slope and the gablet just referred to. There are square hipped weatherings, as at Byland; octagonal hipped ones, as at Whitby; flat piers carried up from the rake to stop against the eaves-cornice, as at Tintera; round shafts carried up to support the arcading of the water-table, as at S. Stephen's, Beauvais; and flat tops, as in many instances where a flying buttress springs from the attached one. If we include pinnacles, there are plain pyramidal ones, either on the square or the octagon; then both of these with a gablet on each face, or again with crockets up their angles; canopies resting on detached shafts, as at Rheims and Sens, with arches from shaft to shaft, and with miniature pinnacles at each corner; pinnacles with panelling, and flat ornament, and diaper; pinnacles formed by sculptured figures, as at the Sacristy of Notre Dame, Paris; not to speak of round pinnacles, like those at the Synodal Hall, Sens; and triangular ones, like some at Peterborough, and, if we remember rightly, at Geddington. But these too tempting details hardly belong to the present subject. Our remarks have been meant to apply to buttresses of a comparatively simple type: to point out that character, individuality, definite and concentrated expression, are amongst the chief things which an architect should aim at, and to show that these may exist in a high degree, even where there is hardly anything that can claim the title of ornament at all.

THE DOMESTIC ARCHITECT.—I.

TO many young and perhaps to a few older architects, this heading may appear to refer to but a very modest, perhaps even trifling, matter, and the due study of domestic building may seem but little worthy of consideration compared with the grander types of ecclesiastical and civil architecture. And yet there is reason to think that the weak point in the profession lies in the increasing fewness of professional commissions for design of private dwellings, and in the enormous growth of such business as is now put into the hands of builders, land-surveyors, estate-agents, and the like. The pages of the Building News, and indeed of all the serials devoted to professional matters, have teemed with complaints of the badness of the times for architects, in consequence of the increase of scarcely-legitimate competitors, and various remedies have been suggested; but the truth not appearing to have been fully touched, it is surely worth while to devote some little space to the consideration of the whole subject, both from the point of view of an architect and of an employer. For the present, the contemplation of churches and public edifices will be passed over, and domestic buildings will alone receive attention.

All who intend to build a private residence desire to build well; if cheaply, still, to the best of their knowledge and ability, they desire to build well. They probably generally have some plan in their heads which more or less embodies the idea of the dwelling they mean to erect, even if they have not seen some building which nearly comes up to the standard they have fixed for themselves. If dwelling in the country, they probably amuse themselves in examining such private residences of recent erection as may be within reasonable reach, and they will be glad to receive suggestions from their owners and to study such plans as may be offered to them. At this point it is often a question of seeming chance whether a builder is not consulted and eventually entrusted with the entire conduct of the matter, or whether an architect is applied to. Here it is that very frequently serious harm is done to the profession, by a too common mistake into which both employer and architect are apt to fall. Supposing an architect has been called upon or sent for; if a very young man, he will run the risk of dazzling his client's eye by a picture of a building so seductive as to tempt him into accepting it, to find when reduced to matter-of-fact plan, and to the touchstone of specification and builder's estimate, that all his time has been thrown away, and the pretty exterior must be given up or its features so reduced and attenuated as to be a grievous disappointment to both. Or else the client has already so obstinately settled his mind upon some rudely-digested but pet plan, that the young professional adviser, anxious not to lose a customer, is obliged to defer to the opinions of his employer, and strives to patch up something by way of compromise between what his judgment would approve and what his client insists on; too timid and inexperienced to direct, and yet not working with any enthusiasm, as in the former case where his was the pet plan that was sought to be made to dominate.

At length some plan for the internal arrangement of the dwelling and a design of the exterior are settled upon, the working drawings and contract are made, and the building is fairly commenced. It is then, as the structure gradually developes itself, that the owner begins to wish he had given the subject closer attention, for even he can see what improvements on his plan might have been made, and how much better it might all have been. At this stage of proceeding he probably blames his architect, forgetting that his own obstinacy denied his adviser a voice when it could have spoken with advantage. Finally the building is completed, o the but cold satisfaction of its owner, who is only too glad to get so much trouble off his hands, and to the relief of the architect, whose professional pride (if he have any) and personal feelings (if he can afford the luxury) have been perpetually jarred upon and mortified, from the first pencil-stroke upon paper to the last touch of paint in the finished building. The result probably is a mental resolve, should he have to build again, to avoid an architect, and to advise his friends to do so likewise, and to put himself in the hands of a "practical man," as the builder is emulous of being called.

Well, when this is done, the first steps are somewhat different. Either a house is visited together and one ordered like it, but with (one may be sure) certain deviations and improvements; and if the owner have a plan of his own, the builder talks it over, and puts his two feet rule to it, and presently brings "just a draft you know," which most likely comprises a showy exterior, quite as delusive as the dream-like study of the young architect; and a price being mentioned, the building is commenced, and is in due time completed. How the owner may be pleased will then depend upon himself, his taste, the thickness of his skin against the comments of his friends, the conscience of his builder as to "extras," and the first year or so's experience as to repairs; but the time must come when he will, as before, wish he "had given the subject closer attention." We will not suppose that the builder has in this latter case been dishonest, or in the former that the architect has been incompetent, and yet the employer has not fully satisfied himself, although probably he remains less displeased with his builder's house than in similar case he was with the architect's services.

Much of this dissatisfaction is due undoubtedly to the indefinite relations existing between client and architect, and in a less degree to the reticence oftentimes unwisely assumed on the part of the professional man upon matters of etiquette, which really should be as openly discussed as all other matters of mutual interest. The prolonged and angry discussion that the pages of architectural publications and of the daily press have teemed with lately upon the really trifling matter as to whether a client was or was not entitled to the "plans" prepared for a building the erection of which he had delayed or abandoned, never would have occurred had there been more confidence between the public and members of the profession. The solution of this particular question seems so simple, so conformable to the rules of common sense, that, clearing away the angry clouds of litigious controversy, and the fogs created by judicial opinions on a point which, in all deference, it may fairly be said the judge did not fully comprehend, it appears almost incredible that any difference of opinion should have arisen. The simple rule should be this: let it be in all cases understood that the original drawings are of course the property of the architect because they represent his idea, his copyright so to speak, but if, after his long labours for and with a client, the latter wishes to have a set for his own use and study, surely so reasonable a request should at once be complied with, perhaps not always gratuitously, but at such moderate charge as would pay for the careful and neat preparation of an office copy. This would satisfy the client, and the architect would (as he should) retain the original documents, without which being carefully preserved no future details could be made. It has not been claimed that a client has ever attempted or intended a dishonest use of such "plans," and therefore an architect would be uselessly tenacious of a fancied right if he refused a copy of that in which his employer was naturally so interested.

Now it seems that all this might be changed if there were a better knowledge of the principles that should guide in the selection of a plan upon which to build. A man builds (if for himself) generally for a lifetime, not to gratify the whim of a moment: "Build in haste, repent at leisure," is a maxim of which many ere this have found the truth; nor is the character of a house so much a matter of mere taste as many assert. The planning of a building requires calculation, science, experience, as I daresay all have found who have endeavoured to reduce their ideas into tangible form upon paper. It is not necessary, nor indeed possible, that every one not practising the profession should receive the education of an architect; but it is necessary and quite possible that every fairly-educated man should know something of its elementary principles, not, it may be, of its technicalities, but enough of the differences and histories of the various styles and epochs of architecture to appreciate the excellencies he would incorporate in a contemplated building. The excellencies of a design for a domestic building may be briefly stated thus:

Convenient Arrangement.

Facility of Construction and of Repair.

Perfect Protection prom Heat and Cold.

Adequate Means of Warming and Ventilating.

And (in the country) Congruity with the Scenery around.

In these may be summed up all that has to be studied in the contriving and construction of a domestic building, and however small may be the house, and however moderate the outlay, the architect will find every case that comes before him present peculiarities of it own, and will best satisfy his client how that his interests are identified with those of his professional coadjutor by sedulously proving that each of these provisions has been met in the plan intended to be carried out. In this list will be seen that, what too many consider the all-important first step, the treatment of the exterior is the last thing thought of, and that it should be the last thing presented to a client cannot too strongly be insisted upon. Half of the evils of unsatisfactory relations between the two result from the sketch of an exterior being shown too soon: and whilst a really good artist will, whilst working out the problems of internal arrangements have, in his mind, an external expression that grows out of and developes with his plan, he will be slow to give it intelligible form until all the main features of the accommodation have been suitably provided.

In a country house, unless the ground be of large extent, the question of site will generally have been settled before the architect's services are called in; some little margin may be left to him, but beyond a general carefulness that the building stands conveniently upon the ground, very little is possible in this respect. And yet even in a small area, careful planning will permit an artistic disposition of the garden, walks, levels, and outbuildings, which a conscientious architect will duly attend to. General rules are scarcely possible, the only remark insisted on being that the features of the ground materially assist in giving the leading lines of the plan of the house.

Where the land is of greater extent, the architect should remember that he must also be a landscape gardener, at least to the extent of so placing the buildings as best to command the natural features of the site, and to permit of the laying-out of the grounds to advantage. He should place himself thereon upon such a spot as may seem to fulfil these considerations, and in so doing a plan will be sure to grow in his brain which will give to each apartment and portion of the house its proper aspect and relation. The views commanded by each window, and the convenience of outside approach, naturally give the order of the apartments and entrance hall, and whilst there are undoubtedly some general laws of aspect which it would be well to bear in mind, on the other hand a skilful use of the circumstances of each particular case will generally permit no room to have any positive objection as to its exposure and fenestration. A room may be very pleasant to its occupants, and yet may have to be so placed as to be of an undesirable aspect; the nature of the ground and other peculiar necessities frequently compel this, and so the architect should not pronounce his ex-cathedra dictum, that such and such a room must not be placed in the position that otherwise would appear most desirable, because its exposure is not in accordance to rule, but having determined the better convenience or comfort of the unorthodox arrangement, he should skilfully contrive such a treatment that will lessen the objections and overcome the difficulty.

[We must reserve the remainder of our remarks on this subject for our next number.]

◆

THE ROYAL ACADEMY.

Distribution of Prizes.

ON Saturday evening the usual annual meeting for the award of prizes to the students took place at the Royal Academy. The weather was wet and inclement, but three was a good attendance of the Academicians, with the President, Sir Francis Grant, at their head, as well as of students and their friends. Addressing the students the President remarked that the Council were dissatisfied with the result of the year's studies, although it was true that in one or two instances very creditable works were exhibited, and complained of the small number of competitors. He alluded more particularly to the deficiency in the class of architecture, only four students out of a total of upwards of sixty upon the books having sent in drawings, and in one division, that of measured drawing from an existing building, there was no competition, only one set of drawings having been submitted. The President paid a well-merited compliment to Mr. R. Phené Spiers, and remarked that the Academy had expected better things from the students in the architectural class, from their having had the advantage of his experience and ability in tuition, but as Mr. Spiers's appointment has only been of very recent date, and it is only within the last few weeks that arrangements have been made to enable him to enter upon his duties, it is rather premature for the Academy to expect any great results from Mr. Spiers's instruction. Sir Francis went on to say that notwithstanding their dissatisfaction, the Council had resolved to award the whole of the medals and premiums, with one exception, and the distribution of the prizes then took place.

The following is a list of the successful competitors :—

Painting from the Life, Mr. Frederick Cottman.
Drawing from the Life, Mr. Douglas Miller.
Drawing from the Antique, Mr. E. Hughes.
Restoration from the Antique (the Illysus, from the Parthenon), Mr. Abel Thorneycroft, son of Mrs. Thorneycroft.
Copy from an Old Master (Sir William Chambers, by Sir Joshua Reynolds), Mr. William Gair.
Architectural Travelling Studentship (1 year), Mr. Walter Lonsdale.
Architectural Drawing (Strand Front of Somerset House), Mr. Henry Hall.
Model from the Antique (Apollo), Mr. Abel Thorneycroft.
Best Drawing from the Life during Current Year (£10 Premium), Mr. Frederick Cottman.

The award of the travelling studentship (one year) appeared to give great satisfaction to the students, and there can be little doubt that Mr. Lonsdale's design was the best of the three submitted. The subject chosen was a mausoleum for naval and military heroes, with a chapel attached—a pedantic, academic subject which is not calculated to excite much enthusiasm. Two of the designs were Gothic, including the successful one, and the third Classic, based upon modern French models. Mr. W. Lonsdale's drawings are beautifully executed, and the design is agreeable, but it is certainly a matter of regret that most of our young men take their inspiration from Viollet le Duc's Dictionary. Mr. Lonsdale appears to be a disciple of Mr. Burges, but he has a lighter hand and a more graceful fancy than his master. The plan of the other Gothic design is, perhaps, better than the premiated design, but the elevation is not so good, although there are some remarkable points of resemblance between the two. The Classic design is not at all a happy one, and the drawing is very inferior to that of the two other competitors. The perspective shows the building to a disadvantage; it looks much better in the elevation.

The drawing of the Strand front of Somerset House, by Mr. Henry Hall, to which the silver medal of the Academy was awarded, consists of four sheets; one showing the whole elevation to a scale of 8ft. to an inch, one a single bay to a larger scale, one sheet of details, and one showing the measurements. The drawing is carefully lined and clearly executed, but the freehand portions are extremely deficient, and entirely spoil what would be otherwise an extremely creditable piece of work. The Persians in the centre of the attic look like caricatures, and the key-stones to the arcade on the ground-floor, which are of singular beauty and variety, are so ill-drawn that a very great deal of the effect of Chambers's carefully studied design is lost. There are but few architects among us who have any knowledge of the human figure, while in France it is rare to find a student who has not at least some knowledge of the subject, and it is to be hoped that the Royal Academy will direct their attention to this neglected portion of our architects' education. Mr. Spiers is, we believe, an advocate for the study of the figure as a necessary branch of an architectural course, and we have no doubt that he will, when the time is opportune, persuade the Council to cárry out his views. The colouring of Mr. Hall's drawings is rather heavy, and the shadows are too opaque. The iron railing to the front is prettily drawn, and the character of the work has been happily caught.

We cannot conclude our remarks without alluding to the insufficiency of the arrangements, and the want of dignity and proper feeling which characterised the whole of the proceedings of Saturday. You enter by that miserable temporary corridor, which has been carpeted with cocoa-nut matting as being the material best calculated to cause dust. To increase the air of discomfort this corridor inspires, only every alternate lamp is lighted, the Royal Academicians being a body to whom a small economy in the matter of gas is no doubt an object. There is no provision for the care of hats, coats, or umbrellas, no restriction as to dress, and men with muddy boots and trousers, carrying their hats and dripping umbrellas, elbow their way amongst ladies in demi-toilette or evening dress. After a while the porter, who is a very important personage, and to whom the whole of the arrangements for the evening appear to have been delegated, enters and says authoritatively, "Ladies and gentlemen, please take your seats." Then slowly the company file off into the large gallery, where are some benches placed in front of a rostrum removed from the architectural class-room, on which has been disposed a large crimson cushion, evidently borrowed from some neighbouring proprietary chapel, and a glass of water. The ladies and the elder portion of the audience seat themselves, and the students group themselves, standing in the background. A pause ensues, and presently the President and the Academicians arrive in Indian file. They all wear an air of deep dejection—they seem to feel their position acutely—and evidently wish it were bedtime, and all were well. Then the President mounts the tribune, and commences by congratulating himself that the occasion does not call for a set speech from him; and, after a few rambling remarks, in a style similar to that of a clergyman at a wedding-breakfast, he proceeds to distribute the prizes. When this is over, we go and walk about again among the drawings until we are tired, and then go home. Contrast the manner this would have been managed abroad, and we have little reason to congratulate ourselves. The business is conducted in a manner quite unworthy of a large and wealthy corporation like the Royal Academy of Arts, which enjoys a virtual monopoly; and the public are to blame if they endure such shabby behaviour on the part of the Academicians. Why should it not be made imperative for the men to wear evening dress? Why should not the meeting be held in the theatre, which is far more appropriate than the room employed? Why should not Sir Francis Grant prepare an address to the students? Why should there be no refreshments? Why, in fact, should the whole thing be a failure instead of a success?

◆

THE HOLBORN VIADUCT STATION.

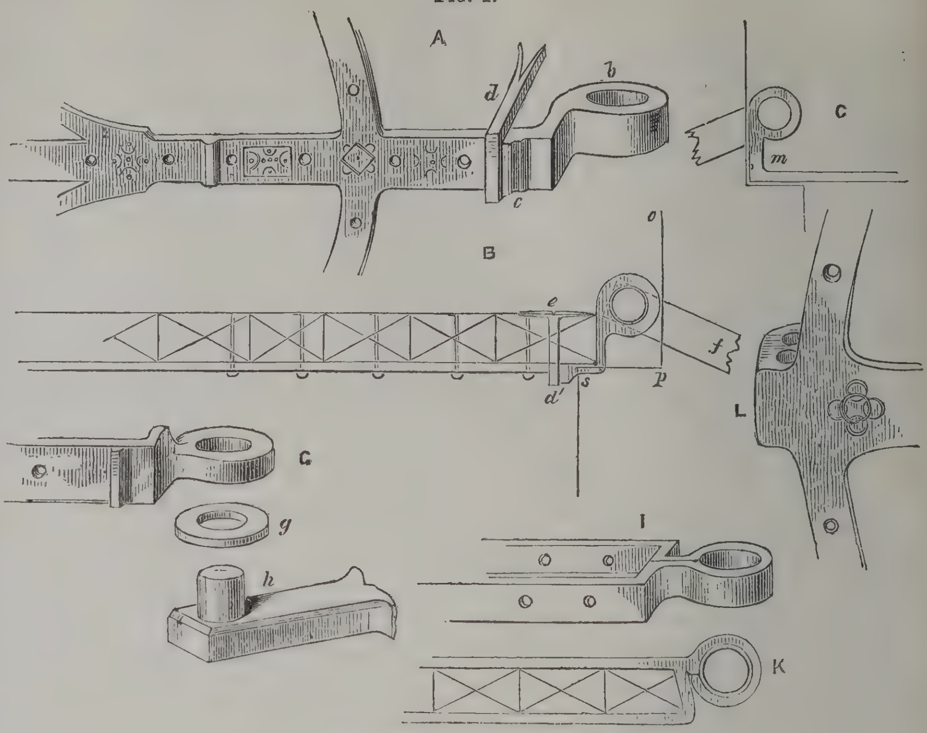
AMONG the plans deposited for the coming session is one which we have on a previous occasion spoken of in the Building News, viz., for the construction of a central railway station on the Holborn Viaduct. The Victoria Station, Pimlico, it may be known (says a railway contemporary), is the property of an independent company, who simply rent it to the companies using it, viz., the London, Chatham and Dover, the Brighton, and the Great Western. The rents the station company receives are sufficient to pay a much higher dividend than any of their tenants have the pleasure of receiving on their investments. The existence and success of the Victoria Station Company have probably suggested the idea of the Holborn Viaduct Station, which, favourably situated as it is in the City of London, ought in the long run to be as good an investment as the West-end terminns. At present there are working junctions between the South Western and Brighton Companies, and the London, Chatham and Dover, but at the Ludgate-hill Station the through traffic to the Metropolitan (Underground) Railway prevents entirely the accommodation they require. The station is not half large enough for the traffic it might accommodate, while Blackfriars Station, though much larger and more suited for a terminal station, has the disadvantage of being on the Surrey side of the river, and thus is of comparatively little use except for excursion and goods traffic. If the South-Western and Brighton Companies are to run their trains to the city, therefore, the Ludgate-hill Station must be considerably enlarged, or a new one built, as suggested, on the Holborn Viaduct; and, considering that the former alternative would entail great expense upon the Chatham and Dover Company, and involve the demolition of very valuable property, and as, moreover, the platforms of the proposed new station would be on a level with the roadway, while at Ludgate-hill a steep flight of steps has to be surmounted—a very bad arrangement for a large terminus—we pronounce in favour of the Holborn Viaduct scheme. The land available for the Holborn Viaduct Station is in form an irregular triangle, with an area of about 3½ acres, bounded on the east by the Old Bailey, on the west side by Farringdon-street, with the grand façade on the Viaduct, a very large portion of which is already the property of the London, Chatham and Dover Railway Company. There is ample space in the area at command for nine lines of rails, for three arrival and four departure platforms, as also for booking-offices, waiting-rooms, restaurants, foreign luggage registration offices, &c. The two cab-ways will be on a level with the Viaduct. The offices, situated in wide forks near the outer end of the station, will have entrances and exits on each side, to be used according to the platforms the passengers may have to depart from. There is ample room for a very commodious erection upon such a site; but what is of perhaps greater importance, a commodious terminal station in such a locality can scarcely fail to prove a great public convenience in relation to both long and short traffic. Mr. Mills and Mr. T. Marr Johnson are the joint engineers.

◆

The new infant school, S. Simon's, Leeds, has been completed. New schools and residence, built at the sole expense of Sir Charles Hugh Lowther, Bart., at Bowers's-row, in the parish of Allerton-Bywater, will be opened before the end of the year. The new schools and residence at Huggate were commenced in October. Messrs. Perstin & Son, of Leeds, are the architects.

MEDIÆVAL IRONWORK.*

Fig. 1.



MEDIÆVAL IRONWORK.

THE Romans were skilful in the art of working iron, if we may judge from the few fragments that are left to us. They used iron in their buildings, not as we do at present, but for ties, clamps, pins, keys, &c. In Gaul, after the Roman era, certain provinces were famous for their works in iron, more especially the northern and eastern provinces—Berry and Dauphiné. Like all the great branches of industry, that of ironworks suffered from the invasions of the fifth and sixth centuries; not that the new conquerors were by any means ignorant of the manufacture of metals, but they rarely used those substances except for utensils, arms, or chariots. As for the art of construction, it had fallen so low that people hardly thought of employing iron, except for rough ironwork for doors and for making grills. The monastic establishments took this lost craft once more in hand; they set themselves to reopen abandoned mines, to establish furnaces and forges, and before long they attained a comparative perfection, or, at least, were enabled to put in circulation a considerable quantity of iron articles wrought by the hammer. Little by little the art of working in iron assumed great importance, and after the beginning of the twelfth century, was carried to some degree of excellence. The methods of manufacture were, however, imperfect; they possessed neither rollers nor flatters, nor wire-drawing implements; they knew nothing of the motive power of steam, by which iron can be worked in large masses. A mill hammer worked by a stream of water formed the whole plant of a factory. The iron, obtained in pigs of moderate weight, was given to the smiths, who by force of arm converted these pigs into bars, into hammered iron, into pieces of greater or less thickness. The file was not then known, shears did not exist, or had but very small power. From this poverty of appliances it followed that manufacture by the hammer attained a certain perfection. The smiths of the Middle Ages had besides acquired great skill in soldering heated iron, which at present can be accomplished only with great difficulty. It is true that the preliminary processes in reducing the iron to bars were so numerous that they imparted to the metal a quality which can never be attained by our modern methods. Our iron passes from the state of cast pigs but slightly wrought by the forge hammer to that of bars, by the process of flattening in the rollers, without any intermediate process; whereas formerly the iron arrived only by slow degrees, and by repeated hammerings, from the pig stage to that of the bar or plate. This iron, from incessant hammering, acquired a tenacity, and at the same time a ductility, which it cannot possibly attain by our present processes. More compressed by the beating, more compact, more ductile, it did not *burn away* so readily in the fire, and was easier to solder at a white heat without breaking up.

Hinges.—We thus designate the bands of iron nailed and pinned to the woodwork of doors, furnished with a eye fitting into a hook, and intended for hanging the doors and permitting them to swing easily on the hooks. Jousse,† in his treatise on ironwork, so valuable now as explaining to us some of the processes employed by the mediæval smiths, expresses himself thus on the subject of hinges:—"These are bars of flat iron, which must be pierced all their length, in order to fasten them to the door with clenched nails, or with a cramp, which passes over the neck of the band and through the door, and is riveted on the other side of the wood. The end of this band is twisted into a round form, of the size of the upright of the hook—that is, the end which projects from the stone or wood in which it is fixed. This end enters the twist of the before-mentioned band, which may be soldered and rounded so that the hook may work easily. The Flemish bands are made of two pieces of iron soldered together and rounded as before to receive the hinge. After they have been soldered they are opened and separated to the extent of the thickness of the door, and then bent back as nearly square as possible, so as to make them hug the two sides of the door, the outer one especially. Bands of this kind are better than the common ones, because they take both sides of the door. Three are generally used, sometimes two, of these Flemish bands, or other good ones, with a pivot below, which takes the bottom of the door; this is better still if it is well made and properly put together." There is no doubt that hinges of doors were made during the Middle Ages exactly as Jousse shows that they still were at the beginning of the seventeenth century. These pieces of iron, regarded as concerning the art of the smith, are of very great importance. The workman who can make a hinge of the kind so often found attached to the doors of buildings of the twelfth and thirteenth centuries has attained the utmost limits of his art, and is competent to work the most difficult pieces.

Fig. 1 shows various kinds of hinges. At A is the plain hinge, with its eye at (*b*), its neck at (*c*), and the clamp for fixing it behind the thick part of the neck at (*d*). B is the section of the hinge cut through the door; (*d'*) the clamp with its double clenching at (*e*); at *f* is the fixing of the hook. The line (*o p s*) indicates the face of the jamb. The Flemish hinges with double bands are made as shown in the sketches I, K.

The most ancient hinges have soldered to their neck an arc of iron, which closely hugs the woodwork of the door near the margin. This system, adopted in the eleventh century, presents a difficulty in soldering, for the iron must be beaten down so as to get out from it the stumps to which the two branches are to be soldered, and an end must be left long enough to form the eye from, to solder it and bend the extremity. In these operations care must be taken that the iron is not burnt, that the joints of the two curved branches are strongly made, and that the iron has exactly the proper degree of heat. But these difficulties are nothing compared to those that arise in soldering the many branches of which these hinges are often composed, and which spring from the principal stem. We are not to suppose that the manifold branches soldered to the stems of hinges are mere ornaments. These branches, pierced with holes, admit of an increased number of nails, hold firmly the boards between them, form a kind of iron network on the surface of the door, and prevent the stems from yielding to the weight of the boards. In this necessary construction the smith discovered an opportunity for ornament. The oldest hinges are, in fact, so constructed that in hanging the door they hold together, over a considerable space, the boards nearest the neck or eye. Thus we not unfrequently find hinges of the latter part of the eleventh century which take the form of the letter C, soldered at the neck in such a way that the two branches nailed on the boards hold them strongly together over their whole length. Soon after this we find a band independent of the hinges, and called a false hinge, binding firmly all the boards of the door. Works of this kind may be seen on one of the doors of the Cathedral of Le Puy en Velay at Ebreuil. These are very beautiful;* they date from the twelfth century. The whole composition of the ironwork on the principal door of the Church of Ebreuil is very remarkable. Each leaf of a door is hung by two hinges only; seven false hinges adorn the boards and hold them together. The false hinge in the middle, richer than the other six, forms a double branch of beautiful character. This ironwork is placed on skins glued on the wood and painted a bright red. Two rings attached to the muzzles of bronze lions facilitate the opening of the doors.

---

* Translation from Viollet le Duc. "Dictionnaire Raisonné," Vol. VIII., p. 288, article "Serrurerie."

† "De la Fidelle Ouverture de l'Art de Serrurier," par Mathurin Jousse, 1627.

* Description referring to diagram omitted.

◆

GREENGATE BRANCH FREE LIBRARY, SALFORD.

ON Monday evening last this building (of which we give an illustration) was opened by the mayor. The site is a rectangular plot of land, on the southerly side of Broughton-road. The style of architecture is Gothic, the front being faced with stock bricks and Darley Dale stone dressings. The lower portion of the front wall comprises an entrance doorway and an arcade formed of sunk panels and piers, with moulded brick reveals, projecting weathered sills, and moulded heads. There is other ornamentation arranged in such harmony of design as to give the front a very pretty appearance. On the ground floor there is an entrance vestibule, and the lending and reference library room is 34ft. long by 26ft. wide, and the news-room 34ft. 8in. long by 34ft. wide in the rear. The height of the room to the top of the wall plate is 18ft., and to the ceiling 33ft. The internal fittings and fixtures are of pitch pine. The library affords room for 8,400 volumes, and in the news-room there is accommodation for seventy-five readers. Ample provision has been made for warming and ventilating the building, warm air being conveyed by means of flues through the patent-heating apparatus supplied by Messrs. Whittaker & Constantine. The cost of the building, including fittings and fixtures, is £1,308. Mr. Scott, of Oxford-road, has admirably tinted and designed the principal window facing to the road. The contractors were Messrs. Thomas Clay & Sons, of Audenshaw, who have carried on the works under the superintendence of the architects, Messrs. Royle & Bennett, of Princess-street.

◆

The annual dinner of the Society of Engineers will take place at the City Terminus Hotel, Cannon-street, on Monday evening next, at half-past six o'clock.

THE FORTHCOMING EXHIBITION OF OLD MASTERS AT THE ROYAL ACADEMY.

As the month of December wanes our thoughts gradually recur to the great treat we had at the beginning of this year in the Exhibition of Old Masters at the Royal Academy, and we anticipate with much pleasure the renewal of such a truly refined delight. From the many rumours now circulating we have reason to presume that the gathering of pictures in 1871 will be equally excellent, if not in some respects finer, than the collection of 1870. We trust the Academy will, by a judicious arrangement, so place the works of the Old Masters with those of the deceased members of the English school that, by a wise juxtaposition of pictures the art-world may have an opportunity of weighing and comparing the merits of our own countrymen with the great painters of the Dutch and Italian schools. Gainsborough and Reynolds last year were gainers rather than losers by this system of hanging, whereas the many Stanfields and Leslies placed together had an unpleasant effect upon the eye, and were very tiring to examine after the rich and harmonious tints of Titian or Poussin, Teniers or Rembrandt. Report says that the companion Altieri Claude from Sir William Miles's collection, a picture whose history would read like a romance, is to be shown this year, and also that Lord Westminster lends many of his finest works by this great master. We are also promised a very splendid Ruysdael, a landscape with a pool, belonging once to Mr. Wells, and so much admired by the many artists who visited that gentleman's beautiful country place—Redleaf. It is still, we believe, in the possession of his son. Constable's celebrated picture, "The Haywain," the oil sketch for which is in the Sheepshanks Gallery at South Kensington, is also to be exhibited. This landscape, at a time when Constable was not much thought of by his own countrymen, obtained a gold medal in the French Salon, and created quite a revolution in French landscape art. One of their greatest landscape painters, Troyon, is said to have been much impressed by it, and to have deeply studied Constable's method of painting. The annual Spring Exhibitions at the Royal Academy are calculated to improve the taste of the general public, but the Academicians, by this excellent arrangement of collecting together and exhibiting the very best specimens of art of all periods, will not only improve the public but the painters, and every sincere and earnest student of art will acknowledge with gratitude his obligations to them as a body for their discrimination and zeal. It is greatly to be wished that those people who are continually copying the modern painters at South Kensington and other galleries would go to the Academy and study the old masters rather than waste their time by mechanically imitating second-rate men with the mistaken notion that they are improving themselves. Let them examine instead, and take warning by seeing how Gainsborough copied Vandyke. We believe a copy he made of the Duke d'Alembert, a portrait of a warrior in complete armour seated on a white horse, for his own studio, will be in the collection. This picture Gainsborough copied with the intention of obtaining that peculiar felicity of execution he saw in Vandyke, and the copy is an example which many, if not all, copyists would do well to profit by. Talking of Vandyke reminds us that the Queen is said to have lent several of her fine works by this painter to the Academy. Among the English school we have reason to believe that Turner, Crome, Vincent, and Constable will all be well represented; and from the fact that Lord Ashburnham and Lord Overstone, together with Lord Dudley and Mr. Baring, have liberally allowed any pictures from their fine collections to be made use of by the Academy, we have at least just grounds for believing that the exhibition will be of more than ordinary merit. It is to be opened to the public on the first week day of the new year, and when that happy period arrives we shall hope to present our readers with a more detailed and critical account of the Second Exhibition of the Old Masters.

ON THE HISTORICAL DEVELOPMENT OF ORNAMENTAL ART.

The tenth lecture of this course was delivered in the Lecture Theatre of the South Kensington Museum on Tuesday afternoon last by Dr. G. G. Zerffi. In entering upon Egyptian art, the lecturer said that Herodotus told us that the Egyptians differed from all the other peoples of the ancient world in customs, manners, and laws. This was, however, only the case at a later period, when their theocratic and hierarchic organisations were complete, when everything intelligible and simple had been symbolised. Theocratic Egypt had been the essence, the incarnation, of symbolism, and was undoubtedly a development of older social conditions. Whilst other nations, like the Chinese, Assyrians, Chaldæans, and Indians, had kept some reminiscences of their past histories alive, the Egyptians were but a kind of mysterious symbol. Their spirit had been altogether lost. They had been not only an agricultural, but also an architectural people. They dug canals, constructed catacombs, labyrinths, sphinxes, temples, and palaces, all of immense dimensions. All their works of art had something silent, mournful, and static about them. Though the remnants of art with other nations were often mere skeletons, mere colourless outlines of an extinct social organization. we could trace that organisation with a degree of precision, for those nations had lived living lives. With the Egyptians we had their art in its different metamorphoses embalmed in their monuments, but the connecting links were wanting. Their life appeared to have been a perpetual death. The prospect of death whilst living, and the belief in a life after death, had made their art so still. They were, as far as the knowledge of Herodotus went, the first people of antiquity that taught the doctrine of the immortality of the soul. Their soul was not, however, conscious of its own being, and therefore they were void of all principles of freedom. The Egyptians lived for a mysterious future; their life was a mere preparation for an existence in an invisible realm after death. These facts, if borne in mind, would enable students to understand the gloomy, the monumental, and sepulchral arts, and the styles in architecture and ornamentation of this nation. Symbolism, which at first had found expression in geometrical lines and numbers, assumed by degrees more tangible forms, and whole buildings were devoted to symbolic purposes. With the Egyptians, as with the early Christian artists, everything had been symbolic. Every form meant something different from that actually represented. There was often some slight connection between the apparent meaning and that really meant. This tendency led to the composition of monsters half animal and half human, the animal being used to represent some general abstract idea, whilst the human form was the embodiment of conscious intellect. These symbols had a more tangible meaning with the Assyrians. They were expressions, merely, of the power of the king; but with the Egyptians they could represent any conception, whether astronomical, metaphysical, religious, or scientific. Many analogies could be traced between the Egyptians and the Indians, Chaldæans, Persians, and old Mexicans. This was to be done with the remains of the antediluvian civilisation of Egypt only. The more modern developments were so wrapped up in symbolism that we could but guess at the real meaning of the peculiar forms. Comparative mythology and religion would by degrees remove these difficulties. Egyptian art was certainly a development, whether we compared it with that of India or Assyria, China or Mexico. In combination with Assyrian, Phœnician, and Chaldæan motives, it had served as a basis for the finest forms in plastic art and architecture with the Greeks. The history of Egyptian art might be divided into three distinct periods or epochs:—1. The Old Empire, or Monumental period, which reached its climax between the fourth and twelfth dynasties (from B.C. 3229 to B.C. 2801). Here a time of oppression and subjection intervened, continuing down to 1626 B.C. 2. The New Empire, or Hieratic period; and 3, the Ptolemeian period, during which Egypt lost her independence, becoming eventually a Roman province (30 B.C.). The nomad element had altogether vanished in the works of the Egyptians. Though textile fabrics and wood constructions had formed the basis of their ornamentation, their stereotomy attained very great perfection. The Egyptian architect everywhere attempted to vie with nature. This was to be seen in the mountain-like pyramids, the crystallised forms surrounding an inner kernel, around which the shell was laid like the yearly deposits in the bark of a tree. Natural caves and caverns had supplied the motives for tombs and catacombs. The majestic tranquillity of a river, or the boundless immensity of the ocean, had suggested the uninterrupted lines in the temples. Trees and the lofty peaks of mountains were imitated in pillars and obelisks; woods, with their shady gloom and uniform variety, in columns and hypostyle halls. There had then been a transition into a more delicate use of plants for ornamentation. The animal was then blended with the human form, and these composite figures were used in the construction of avenues. The horizontal line was predominant in Egyptian temples, striving to express the sublime thought of eternity. In the pyramids and obelisks, straight lines and uninterrupted planes also formed the principal element of construction. The pyramids had had an incrustation of syenite and reddish granite. The four triangles were covered with hieroglyphic inscriptions. The labyrinth built under the rule of the twelfth dynasty had its brick walls faced with granite slabs, and its columns of granite. Even the oldest Egyptian works of art were painted, encaustic having undoubtedly been known. The Egyptian custom of reproducing wood architecture in stone, adorned with stucco, was also found in Lycia and Etruria. Dr. Zerffi, having described the various Egyptian styles in detail, concluded by saying that the wall with the Egyptians had not the mere purpose of serving to enclose. The pyramidical form, especially in pylons, was everywhere strictly observed. As a kind of frame, it was crowned with an overhanging fluted cornice, and served as an immense blackboard of stone, on which the priests could inscribe their mystic records. In its superfluous thickness it appeared to be an imitation of former brick constructions. The fact that the enormous granite blocks were overlaid with stucco bore out this supposition. These walls were painted, but merely to facilitate reading. The background was light, the figures in dark outlines. The artists were, in fact, rather lecturers in forms than painters.

The next lecture (on Tuesday afternoon next) will take up Greek art.

IS PERSPECTIVE WORTH ATTENTION?

To my thinking it is, especially in architectural drawings where the degree of attention is at once determinable, and thus far I shall no doubt have the concurrence of every architect; but far too little attention is in fact paid to the science even by those who plume themselves on the matter of draughtsmanship. They are too apt to be content with some approach to accuracy in their principal lines, and totally neglect the subordinate parts. In literature, punctuation is, perhaps, more commonly the work of the printer than of the author, who articulates his chief passages but slurs the pointing of minor inflections. Something of this sort is perceptible in the case of even so consummate an artist as Mr. W. Burges, and is demonstrable by his view of the court at Cardiff Castle, engraved in the Building News of December 9, though quite, I admit, with limitation to points of detail. Here is a charming picture, with groups of figures that would not discredit a painter of history, yet (though it may seem like pointing to spots in the sun) it has its little blemishes and defects. The drawing of the open gallery looked awkward to me at first; but the only cause for this impression is to be found, I should say, in the lines of the roofing, nor even here in the horizontal courses of the tiles or slates, but in the inclined divisions and water-stains by which the slope can alone be artistically expressed. As a perspective censor (so to speak), I should pass most of the roofs in this subject not belonging to the gallery in question; but here the means of giving the true appearance of the slope have been utterly neglected. Take the piece, for instance, just under the tree-tops of the background, and it will be seen that the lines which ought to mark the slope are as vertical as those of the neighbouring wall. At the internal angle next the tower the gallery is concentric with the cone-topped turret, but the gallery roof has no approach to a cone whatever. At the angle of the great tower the gallery roof is hipped, and (strange to say and to see), the lines of inclination are made to lean in one and the same direction, though the planes of the roof are at right angles to each other!

Similar defects are of constant occurrence, and often have a most distorting influence. I think, therefore, that the study of perspective, and the more extensive inculcation and adoption of its rules, may be strongly commended to every artist and to every engraver. T. M.

◆

NEW ELEMENTS OF HAND-RAILING.*

(*Continued from page* 428.)

Plate 13.—Construction of a Wreath for Stairs, starting with Six Winders and a Newel.

Fig. 1. This plan is suitable for buildings having narrow halls and a limited space for the stairs. The position of newel should not obstruct passage. Cylinder should always be more than a quarter circle, otherwise it will be impossible to produce wreath with proper easing at mitre cap.

Some workmen lay down plan with one square step, then commence with winders. Such arrangement is wrong; it destroys the beauty of stairs just at the place where the best effect should be given.

The centre line of rail on this plan being struck with a 9in. radius makes the diameter of cylinder 16in. This, however, is not limited—it may be more or less. The narrow ends of winders can always be made equal to half a square step. For example, draw any straight line, say A B, extended.

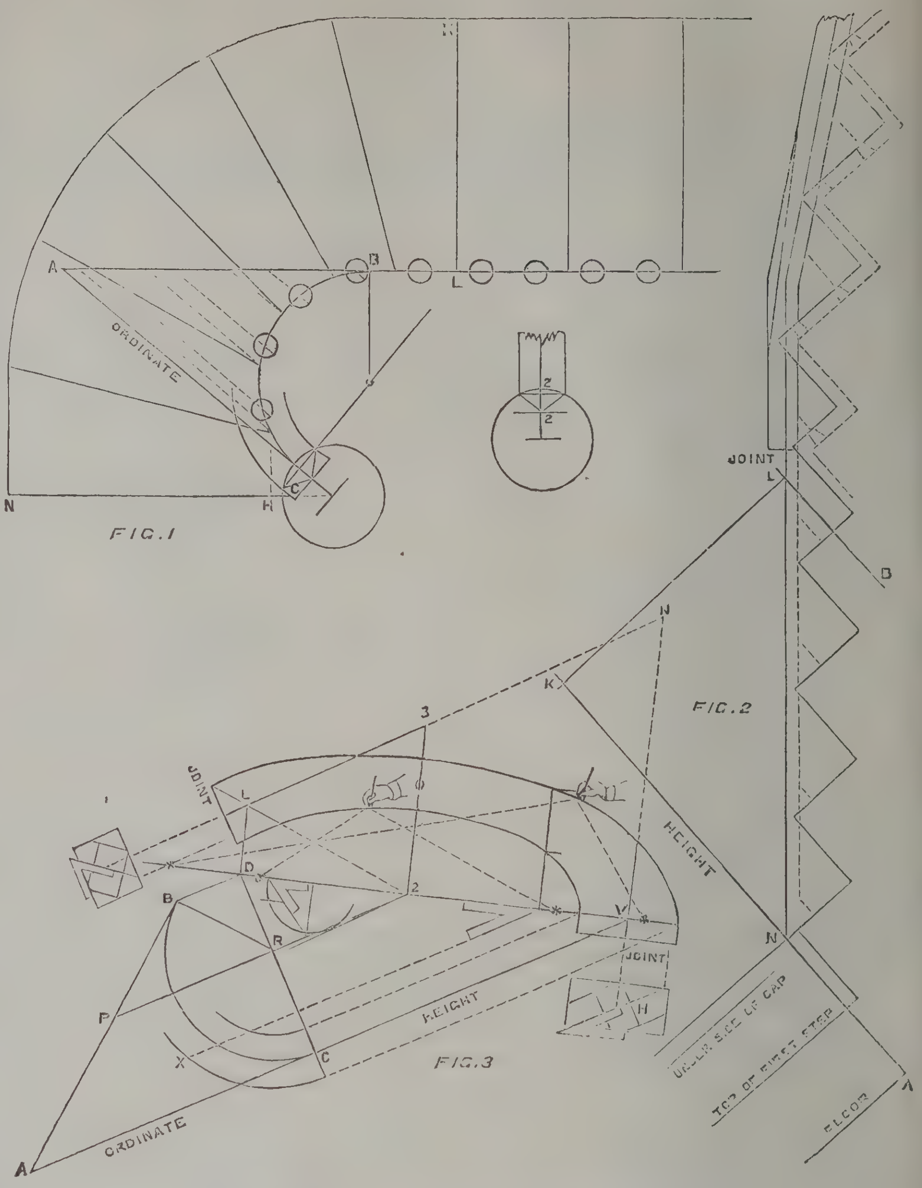
Take any radius, say O B, for centre line of rail. Draw the circle. Next determine width of rail and size of mitre cap. Draw half width of rail on each side of centre line. Take any portion of the circle, greater than a quarter, say C. Then draw from centre O through C. Next, draw line marked ordinate. Have it square with C O.

This done, draw mitre-cap, the centre of which is also centre of newel. Let N H be the face of first riser starting. Make the square line from H equal half a square step. Then set off on centre line the remainder of winders equal to the first. Square over L K. Next divide K N into six equal parts. This done, draw winders and one or two square steps. Set off the balusters and draw from centre of each parallel with ordinate cutting line A B, the object being to show the length of balusters standing under the wreath. The ground plan is now complete, and we are ready to proceed with construction of mould.

Fig. 2 shows the winders and square steps unfolded, standing in the same position as those on plan.

The line L B represents the springing, which corresponds with B on plan. Let L K equal A B or C A, Fig. 1. Draw line marked "height." Next, let under side of rail rest on centre of short baluster, as shown on the square step. Set off half its thickness. Fix upon height of newel from top of first step to under side of mitre-cap. Assume short balusters 2-4, and height of newel 2-10. Then set off 6in. and draw under side of cap. Next, set off half thickness of rail and draw line cutting at N. This is a fixed point. Draw from N the pitch over winders to intersect centre of rail on square steps; this line being entirely discretionary. Yet some attention must be paid it in order to have a proper ramp to connect with wreath. The pitch having intersected spring line at L gives a direction to draw from L cutting at K, which produces the height K N.

To find length of balusters under the wreath, set off half thickness of rail indicated by dotted line. Return to ground plan and notice lines drawn from centre of balusters and narrow end of winders, cutting line A B. All are parallel with ordinate. Then, by transferring the intersections thus made to those of Fig. 2, we have the exact position of each baluster and winder; they being unfolded or spread out. The dotted perpendiculars show the balusters and their variations in length.



NEW ELEMENTS OF HAND-RAILING.—PLATE XIII.

These points are in a practical sense of no great importance, yet right and proper to understand, as a method by which the length of balusters can be shown.

Fig. 3. We now commence the construction of the mould by drawing any straight line, say that marked "Ordinate and height." Let A C equal C A or B A on plan. Square over C R the seat. Let C R equal O B on plan. Draw circle. Take A C in compasses, and with A for centre, intersect the circle at B. Join A B. Draw B D parallel with ordinate. Let C V, the height, equal N K on the right. Join V D, and we have the pitch. Now joint the edge of a board for mould. Run a gauge line to equal mitre on plan. Lay it on and mark V 2 D. Square over the lines. Let D L equal D B, and 2, 3 equal R P. Join L 3. It is understood that the gauge line on the board represents the pitch V D.

Find points to insert pins. Strike mould with a string, as shown. Should there be any doubt in regard to correctness of curves, owing to string stretching, points may be readily obtained through which curves must pass. For example, draw width of rail, or a portion of it to left of C. Make any line parallel with ordinate cutting at X and pitch. Square it over, and transfer distances from X to seat, and we have two points through which the curves must pass.

The same method would produce this or any other mould without use of string or trammel; loss of time making the only difference.

The correctness of drawing is proved by line L N, being equal to corresponding letters on pitch, Fig. 2.

The square sections show joints and application of bevels. Let stuff be cut square through. Face one side and make joints. Mark width and thickness of rail as shown. Lay mould on. Keep its joint on the wide end fair with that of stuff. Let square line through V stand opposite that made by bevel H. Then 3 L will stand over the bevel line on the left. The application to the other side is just the same. Take off slabs and give wreath its cylinder form. This done, cut off slab H, square with joint. Mark mitre and cut it (but not entirely through until the moulding is done). Work underside first. Gauge to a thickness.

It may be proper to remark that a wreath which connects with a ramp (as is here the case) should have no straight wood on its convex side. Let the connecting joint be made, as shown at L. This gives the opportunity of continuing curve on ramp into wreath, which makes an easier and better line. Let the stuff be full at joints. Clean off when the pieces are fastened. See that centre of joint on ramp stands back from spring line to equal that on joint L. Also notice the method given to find the proper mitre for a cap. For example: Let 2.2 equal half width of rail. Join the points.

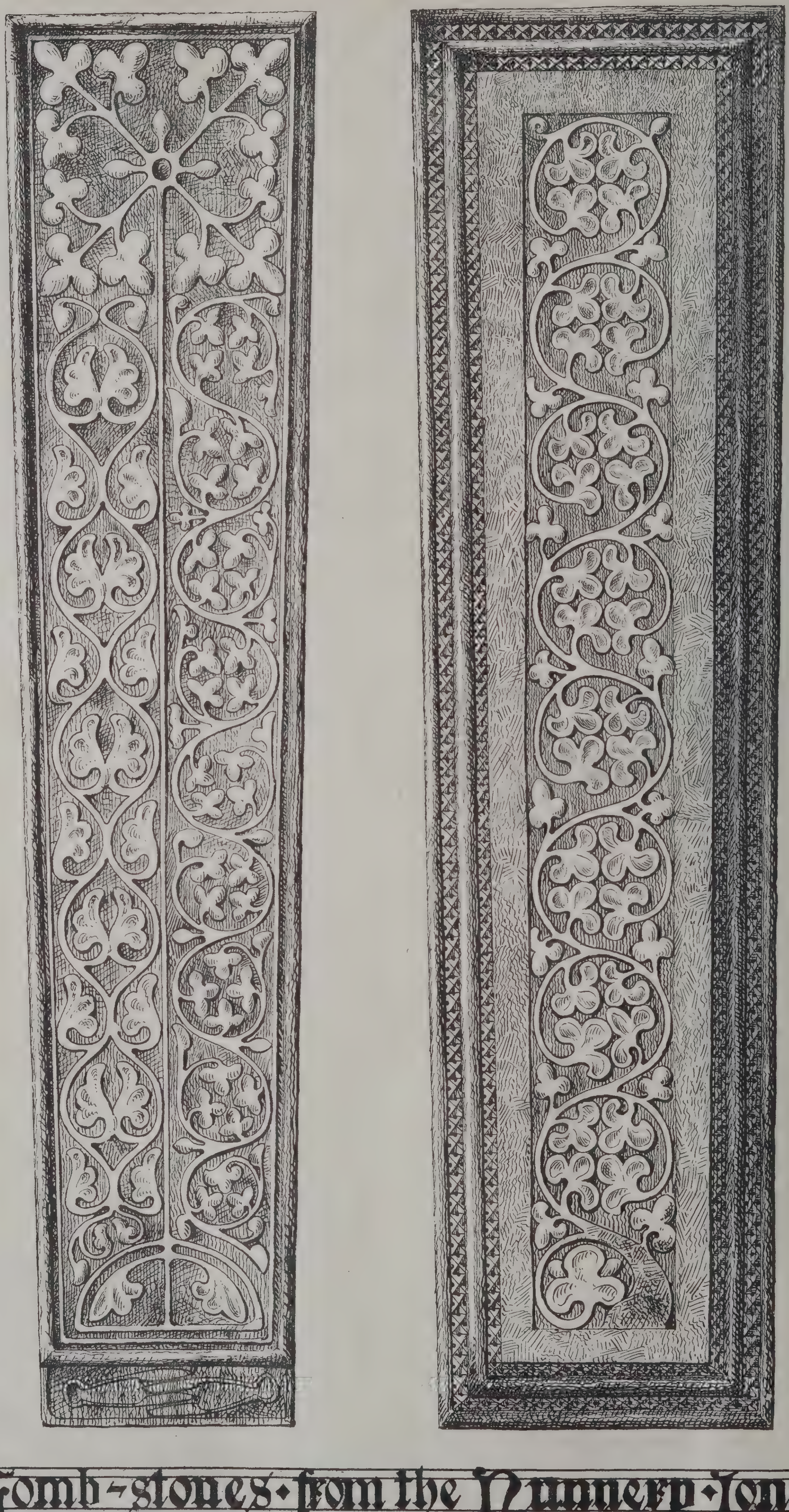
This mitre looks better on a hand-rail than the usual angle, *forty-five*.

◆

The Institution of Civil Engineers.—The fifty-third annual general meeting of the members of this society will be held on Tuesday evening next, the 20th inst., when the yearly report of the Council on the position and prospects of the Institution, together with a statement of the funds of the Institution, and of the receipts and payments during the past official year, will be presented, and the election of the officers for the ensuing year will take place.

---

* This series of articles is a reproduction of Robert Riddell's work on the subject, published in Philadelphia, and by Trübner and Co., London.



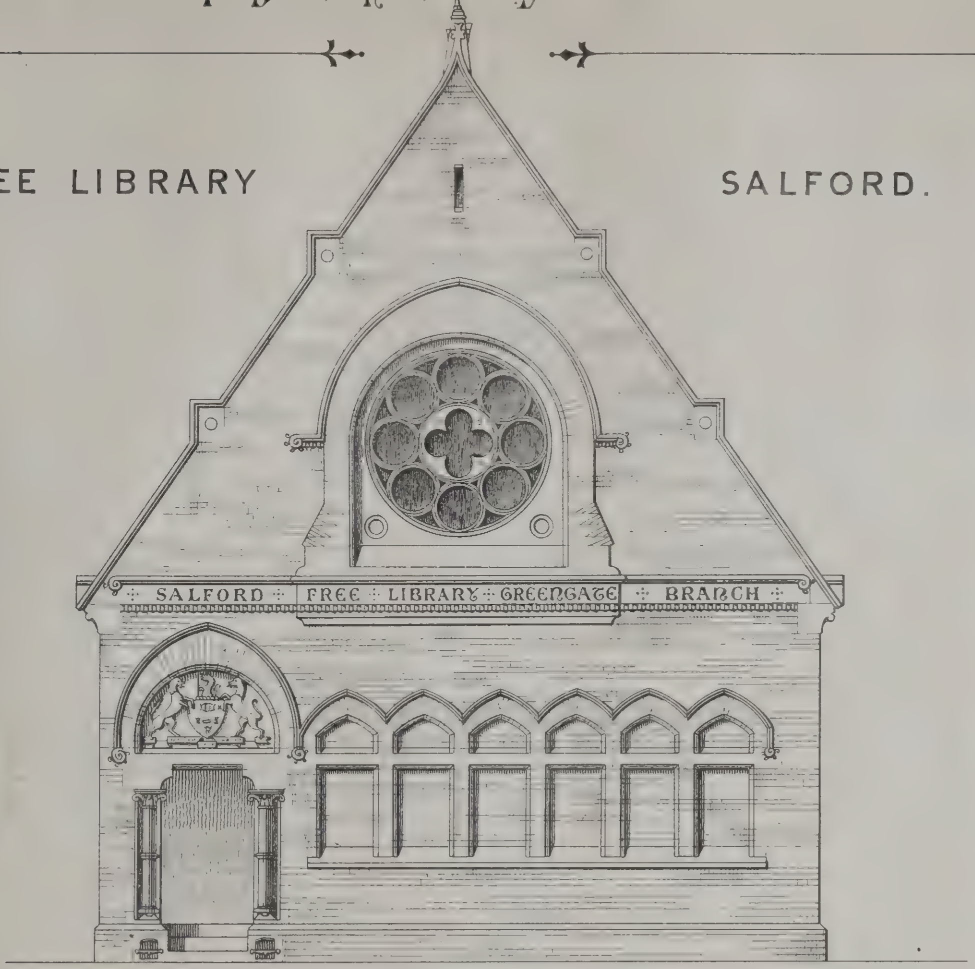
Tomb-stones ◆ from the Nunnery ◆ Iona ◆

P. Auld, del

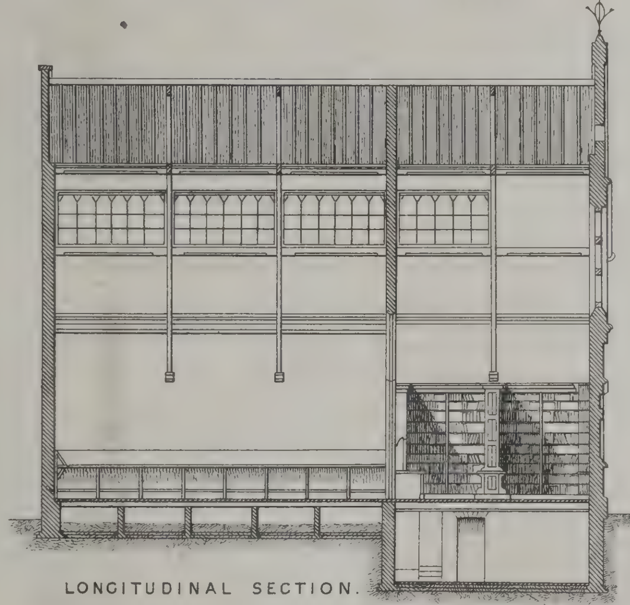
Photo-Lithographed by Whiteman & Bass, London.

The Building News, Decr 16th 1870.

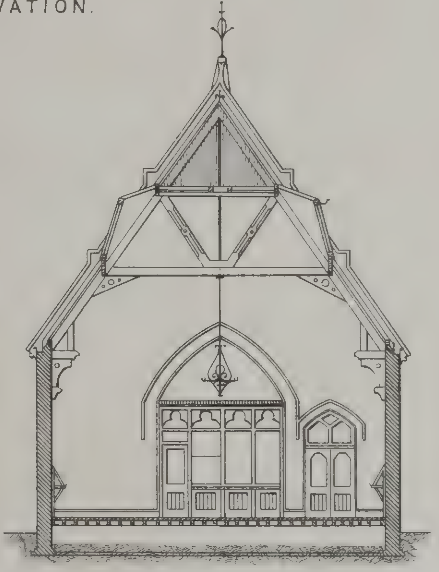
FREE LIBRARY SALFORD.



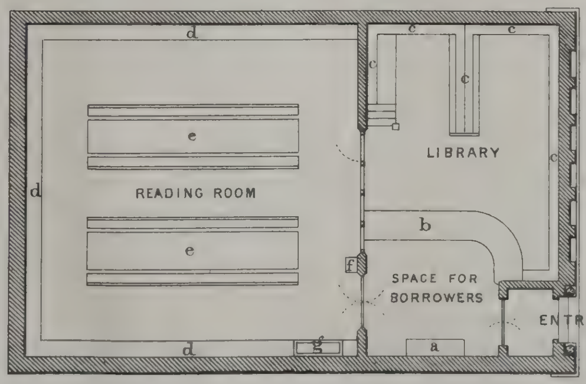
FRONT ELEVATION.



LONGITUDINAL SECTION.



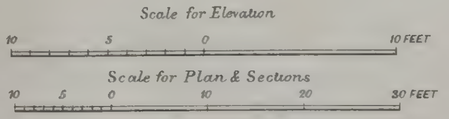
TRANSVERSE SECTION.



PLAN

REFERENCE

a	Catalogue desk.
b	Borrowers counter.
c.c.c.	Bookshelves.
d.d.d.	Newspaper desks.
e.e.	News tables.
f	Filter stand.
g	Umbrella stand.



Geo Green Lith
ROYLE & BENNETT, ARCHITECTS, MANCHESTER.
Printed by Whiteman & Bass.

HOUSE ACCOMMODATION FOR THE LEARNED SOCIETIES.

[COMMUNICATED.]

IN our article upon this subject the other day, we ventured to suggest that other sites were obtainable than that pointed out by Dr. Guy near Parliament-street, Westminster, which we believed was not attainable for the purpose. We also stated that another scheme had been prepared besides that of Mr. Bellamy's, for the incorporation of and addition to Inigo Jones's banqueting house. Since then we have been favoured with a sight of these plans, in which have been embodied the other scheme, of which we then knew nothing. Curiously enough, it turns out to be located in Victoria-street, Westminster, to which we alluded as likely to afford the accommodation required. The idea originated with, and the plans have been prepared by, Mr. Ernest W. C. F. Schmidt, architect and surveyor, and Associate of the Institute of Architects. It appears that this proposal was made and supported by delegates from several of the learned societies, at a meeting held at the Statistical Society, on the 2nd November last. It consists of an adaptation of the central block, No. 4, of Westminster-chambers, Victoria-street, nearly opposite the Westminster Palace Hotel, with additional buildings upon the vacant space of ground at the back of the same, comprising a large lecture-theatre, capable of holding 1,200 persons, with museums, libraries, and all the adjuncts necessary for the accommodation of the various societies under one roof, by which means their establishments and number of meeting rooms, &c., would be greatly economized.

It will be remembered that the opposition scheme, if we may so call it, only proposed to find similar accommodation for less than a third of the number of the institutions which here are offered to be included—a point immensely in favour of the one under present consideration. The number of the members of the several numerous scientific societies not yet housed is about 12,000. Now the cost of this site in Victoria-street, together with the expense of the buildings, could be easily met, with or without application for Government aid, by each member subscribing £5 to a fund for the purpose; and this, it may be assumed, would be done; the deficit occasioned by any refusals to subscribe this sum would be more than made up by the number of those who would subscribe larger sums.

Under these circumstances, we are disposed to think that Dr. Guy's scheme might be carried out, so far as the appropriation of Inigo Jones's banqueting-hall to the United Service Institution, with advantage—and it is far more suitable to such a purpose than as a church. A new royal chapel might be built in lieu thereof on the Embankment, and form a beautiful ornament thereto. But we cannot but think that instead of three or four societies only being crammed—as we pointed out they must be crammed—into a duplicate block to the banqueting-hall, to their mutual disadvantage, that all the fifteen houseless institutions now seeking shelter should join their forces and carry out some such a plan as that which Mr. Schmidt has laid before them.

Having carefully examined his drawings, we must own that they are very practical and economical. In the interests of architecture, we certainly should prefer for such a purpose an entirely new building, upon an equally good site. But where are the funds or the site to be obtained? As to the latter, we named Victoria-street, and then our thoughts were upon some of the vacant plots further from the Abbey. It cannot, however, be denied that the one selected would be preferable to any of those, from its proximity to the Houses of Parliament, and that the buildings now erected on it are substantial, fire-proof, suitable, and economical.

HOUSE FOR THE LEARNED SOCIETIES.—TABLE SHOWING ACCOMMODATION FURNISHED BY MR. SCHMIDT'S PLAN.

Area of Museums.	Available area.	Area of meeting rooms.	Area of lecture-theatre and gallery.	Height of theatre.	Area of library.	Wall space in library.	Number of seats in theatre and gallery.
sq. ft.	sq. ft.	sq. ft.	sq. ft.	ft.	sq. ft.		
15,911	17,920	4,060	5,507	59	2,470	7,344	1,600

Referring briefly to the plans, we find, on reference to the block plan, No. 1, the frontage is 58ft. 8in., and the total area 17,920ft., the plot of vacant ground at the back containing about the fifth of an acre.

The basement plan, No. 2, shows that this area is divided thus:—

Office space for two separate societies, and a large common lecture-theatre to contain 1,200 persons, with refreshment-room, kitchen, and office, workshop, laboratory, grand and back stairs, stores, heating apparatus, porter's rooms, water-closets, lavatories, &c., and a space under museum, which may be excavated and let as storage, or wine vaults, with a separate entrance. A lift also rises to each floor.

The ground floor plan, No. 3, shows a spacious entrance from Victoria-street, leading to a corridor 11ft. wide, with recesses on either side which would admit of the display of statuary, armour, or other objects of interest. On this floor there is again accommodation for two separate societies, and for museums, theatre, lecture-rooms, ladies' and gentlemen's dressing-rooms, hall and cloak-room, inquiry office, water-closets, lavatories, lift, principal staircase, stairs to theatre, and another entrance to the theatre from the back, and an additional corridor from same at right angles to the principal one.

The first floor plan, No. 4, reached by two grand staircases on either side of the corridor, provides 4,485 square feet of space for three societies. The rest, 1,962ft., is devoted to a gallery in the theatre, with a staircase and corridor, the latter available for utilisation for museum or library purposes. The entrance to the large library is also from this corridor; this has wall space for 50,000 vols., and there is a general meeting-room to hold 250 persons, with lavatories, &c., &c., on the same floor.

The second floor, No. 5, has also a general meeting-room of the same size, and accommodation for three more societies.

The third floor, No. 6, has its space mostly devoted to museums, but has office accommodation, &c., for two societies, and three other institutions are provided for on the fourth floor, No. 7; while in an attic floor, No. 8, are bedrooms for the housekeeper, and eight rooms for gentlemen curators of the societies, bathroom, &c., &c.

The cost of the purchase of site and existing buildings is set down as	£60,000
And of the proposed additional buildings	60,000
Total	£120,000

The accompanying table shows the extent of accommodation offered.

The Theatre of the Civil Engineer's Institution holds	450 persons.
Ditto United Service ditto......	600 ,,
Ditto Royal ditto..............	700 ,,

We think that the particulars above given will conclusively show that Mr. Schmidt's scheme is well worth consideration, which we doubt not it will receive at the hands of those who are so deeply interested in the subject.

◆

BUILDING NEWS SKETCH BOOK.

TOMBSTONES FROM THE NUNNERY, IONA.

THE tombstones forming the subject of my sketch are selected from amongst those now remaining within the chapel of the nunnery at Iona, where the nuns, who were canonesses of the order of S. Augustine, were interred. No inscription is to be found on any of the stones to indicate to whom individually they are ascribed, with the exception of that of the last Prioress, which bears a Latin inscription and date A.D. 1511. Upon some of the stones, however, may be observed devices emblematical of the sex, such as the looking glass and comb upon that of the last Prioress and the scissors upon one of those illustrated in the sketch. PATRICK AULD.

◆

DISTRIBUTION OF WATER INTO HOUSEHOLD CISTERNS.

AT a meeting of the Royal Scottish Society of Arts, held on Monday night, a paper from Mr. J. Winton, engineer, Portobello, was read, "On a simple means for the better distribution of water into household cisterns." Assuming that a ¾in. pipe is sufficient to supply five cisterns for twenty-two families, he pointed out that when the large ball-taps or ball-valves are running full-bore at the bottom of a house, the pressure in the pipes is so much reduced that little or no water finds its way to the top flat. To cure this evil—which, he held, was due not to the supply pipes being of an uniform size, but to the large size of the ball-taps—he proposed to throttle the supply to the cisterns by fitting to the end of the spout of the ball-taps a nozzle-piece having a much smaller aperture than the existing ball-taps. For the two bottom cisterns he would allow a nozzle with an aperture of 3-16ths of an inch in diameter, and for the others ¼ of an inch. By this means the pressure would be maintained in all the ¾in. pipes to the cisterns. Such a plan, if carried out, would greatly improve the distribution and reduce the waste of water. He calculated that the expense of fitting the nozzles would be 1s. per ball-tap, or, supposing there are 40,000 cisterns in Edinburgh, £2,000 in all. The saving, however, would be enormous; and it would not be necessary to expend £400,000 in providing a fresh supply of water.—Mr. Sang agreed with the writer of the paper in thinking the present supply of water to be sufficient, if provision were made to avoid waste. At the present time more than half, he believed, was pure waste—just thrown away; and he thought some step in the way of economising the water should be tried before setting to work to bring in a new supply.—Mr. Alexander Leslie said that Mr. Winton's proposal seemed rather to be a return to the old story of the "strictures," and he did not know that the public would submit to them again.—The chairman differed from Mr. Sang, and did not think that the present supply of water was sufficient for household purposes. Nor did he agree in applying the term "waste" to the water that escaped and flowed down the drains. A certain amount of water was necessary to flush the drains and to carry away foul matters; and, therefore, he did not look upon water as waste when it was employed in this operation, although it might not be used for household purposes.—The paper was remitted to a committee.

◆

ARCHITECTURAL ASSOCIATION.

ON THE CAUSES THAT INFLUENCED THE DEVELOPMENT OF MEDIÆVAL ARCHITECTURE.

(*Concluded from page* 428.)

IN the outskirts of that most interesting of old cities—Trèves—interesting alike to the architect, the archæologist, and the mere lover of the picturesque, situated as it is on the banks of the blue Moselle, with some of the most interesting relics of antiquity in Europe in its immediate neighbourhood—there stands, in almost perfect preservation, a building, which to the eye of the architect, has perhaps a deeper interest than the most picturesque ruin ever sketched. This is a Roman basilica, now used as a Protestant church, and the reason of the deep interest such a building excites, quite apart from the splendid specimen it affords of good bricks and mortar, which still seem likely to last for ages, is that in it we have the type after which the earliest Christian churches were built, and, indeed, it was simply by modifications of and improvements upon these basilicæ that the mediæval architects arrived at their noble cathedrals. After describing these basilicæ, Mr. Slater said that very early in the tenth century some changes began to be made, and although it is anticipating the proper course of the inquiry, it will be better to state them here. One of the first changes was the introduction of towers to hold bells, and another early change was effected by forming more than one apsidal end for altars, while for the accommodation of the assistant clergy one part of the building was railed off from the remainder and called the choir. As congregations increased, and it became necessary to give more facilities of ingress, a narthex or porch was added in many instances. Thus by easy stages of development we have arrived at an almost perfect plan of a parish church, and, speaking broadly, this was the general way in which church architecture developed itself in Europe, although different modifications prevailed in different parts, corresponding with the various temperaments and tones of the different peoples. At first the style of these early churches was nothing but a debased Classic or rather Roman—round arches, Classic pilasters, cornices, and entablatures prevailed, and this style goes by the general name of Romanesque throughout Europe. As a rule, the farther we get from direct Roman influence the more do we find builders relinquishing old models, and starting off with new ideas of their own. But we meet with some striking exceptions to this rule in Italy itself. At Venice, in the ninth century, the cathedral church of S. Mark was commenced, and in this building we have something very different indeed from the common Roman basilica or any copy of it, as its plan is that of a Greek cross, and in many of its details it closely resembles S. Sophia at Constantinople. In fact, it is entirely Byzantine in style, and this is accounted for by the fact that the architect was must probably a Greek. This church of S. Mark is worthy of especial notice, as it had a very powerful influence upon the architecture of other parts of Europe, and was the cause of much of the Byzantine character which Mediæval architecture possessed in some parts of the Continent. At Perigueux, indeed, an almost exact copy of S. Mark's was built about the end of the tenth century, but the experiment does not seem to have been repeated. There is, however, another reason for the Byzantine character which stamps much of middle age architecture, in the fact that the influence of the popes and the clergy had become very extensive by the tenth century, and very intimate relations were kept up with the Eastern churches; and when it is remembered that at that time the reverence for everything in the Holy Land was most profound, it is not to be wondered at that the styles existing in the land should be much copied. But it was not simply by making the Western nations acquainted with Eastern art that the Church of Rome has made us her debtors; it was to a far greater extent by encouraging native genius and by promoting the erection of those noble buildings which still remain as monuments of this period. In A.D. 909 William of Aquitaine founded the monastery of Cluny. The vigour and ability of the governor of this monastery soon gave it great pre-eminence, and its influence upon architecture was speedily felt. Very little time elapsed before a church was built, which naturally served as a model for most of the churches in the neighbourhood, and soon, the monastery having increased in size, it was found necessary to build a larger church—in fact, the largest ever seen in France up to that date—which was commenced by Abbot Hugues in 1089. The monks were of course intimately engaged in the erection of this church, and as Cluny was essentially a "missionary" monastery—*i.e.*, always intent upon sending out men to spread the Benedictine rule—those monks who were sent out carried with them a knowledge and love of the beautiful in architecture which bore fruit that lasted for centuries. France was the first country to benefit by their labonrs, but some very fine buildings were erected during this period in Germany through the influence of the clergy, as, for example, the cathedrals of Speyes, Maintz, and Worms, the latter of which is unfortunately the only one retaining its original aspect in anything like completeness. These were of course in the Romanesque style, and we nowhere yet—except in rare instances—get beyond circular or segmental arches; but the buildings of this period show a very marked improvement upon those of a century earlier, as is easily seen by comparing the buildings erected in our own country in the eleventh and part of the twelfth centuries with those of an earlier date; in fact, architecture, and other arts as well, had received an onward impetus from the fostering and stimulating care of the Church, which showed itself in the next two centuries in the crowning glory of the Middle Ages—the heavenward-soaring pointed architecture. It is certain that a complete change took place in the architecture of Western Europe about the end of the twelfth century, and many theories have been started and pertinaciously held to account for this change, which consisted mainly in the substitution of pointed arches for circular ones. The pointed arch, although not utterly unknown before this date, was but sparingly used in Western Europe. In Perigord it would seem to have been employed more extensively than elsewhere, but this was owing to the settlement there of a colony of Byzantine merchants, who introduced domical vaulting into the buildings erected by them. The theory has found numerous adherents that the pointed arch came into vogue owing to the impossibility which was experienced of vaulting a rectangular space not square without its use. Now, in looking back upon history, it is evident that there are many instances of the discovery of some new way of bringing about a desired end at the precise time when the world appeared to be in need of it, but such an explanation will not suffice if it should be found that theorizers have jumped at a conclusion as to the need without due reasons, and in this case it has been shown conclusively by Professor Willis that there was no necessity for employing pointed arches in order to vault a rectangular bay or square, as it could be effectually done in two ways—either by stilting the smaller arches, or by using domical cells, both of which expedients were certainly adopted by the Romanesque builders, and it is by no means certain that the Romans were unacquainted with the same methods. Of course, as soon as the pointed arch came into general use, it would naturally be employed in vaulting such a space as has been described, as being both lighter and stronger than the old forms, but the theory that pointed arches were the result of a necessity to be got over somehow is untenable. Besides, it would be a most extraordinary coincidence that different builders in countries at a great distance from each other should at the same time find out the same difficulty and also the same means of overcoming it. But if we find that the pointed arch had an existence somewhere long before it was introduced into Europe, and that owing to certain causes numbers of the inhabitants of Europe were brought into the neighbourhood where pointed arches abounded just at the time when they were introduced into Europe, then we have a very strong argument for their having been imitated from some pre-existing specimens. And this is exactly the case; for there can be no doubt that the pointed arch is of Saracenic origin, and that its introduction into Europe was the result of the Crusades, as it was just after the commencement of these that it appeared.

Almost simultaneously with the introduction of the pointed arch, another great change was brought about in architecture by the use of foliation or foiled arches on a much more extensive scale than before; and rapid progress was made in the skilful piercing of blank spaces left between the arches, which constituted tracery. Soon after the introduction of the pointed arch, Mediæval Architecture reached its zenith. During the thirteenth century, the people began to emerge from their obscurity, and whereas before this time the monasteries had been the chief centres of building activity, and the churches the finest specimens of architecture existing, now the cathedrals began to surpass them. A spirit of rivalry was manifested between the inhabitants of different cities—which, it must be remembered, were just rising into importance, and the funds that were subscribed, although too often insufficient to complete what had been begun, must have seemed prodigious in those times. And this popularization of church building was in a large measure the work of the prince-bishops of the time who, finding that the Roman church was becoming more and more monastic, and that in any contention with the papal see the monks stood by it through thick and thin, saw clearly that they must attach the people to their side. The remark of M. Viollet le Duc, that religion caused architecture to advance to a certain point, and then kept it stationary, is perfectly correct; but it must not be forgotten that although the laity began to take matters into their own hands, it was still for religious purposes that the chief architectural buildings were erected. And there was almost a necessity for this, because all parties respected a sacred edifice, but the incessant local feuds of the Middle Ages led to the erection of domestic buildings primarily with a view to defence and not to picturesque effect. Having thus briefly traced the history of Mediæval architecture up to its golden age, Mr. Slater proceeded into the details of its development during that period—the thirteenth century. The rise of the laity from their low and ignorant condition, and their opposition to feudal tyranny, exercised a strong influence upon architecture in promoting the erection of many very fine hotels-de-ville or town-halls. The commercial spirit of the age was rapidly developing itself, and the intercourse of various peoples with each other was becoming more and more extensive, and the good effects of this soon became apparent in the increasing power every one who travelled acquired of noticing what he saw and making observations thereon. The consequent widening of the range of the thoughts and perceptions of men was a powerful cause of the development of art in the Middle Ages. The architecture of this country was doubtless largely influenced by our French conquests, although the peculiar genius of the people soon modified and made its own whatever it had derived from foreign sources. It is simply impossible, in these days of indifferentism and secularism, to estimate with anything like adequacy the powerful hold Scripture events and legendary stories of the saints had upon the minds of the populace in the Middle Ages. The architecture of the times was partly a cause and partly a result of this feeling. Some events in the life of our Saviour were invariably represented in every small church that was erected, and, besides, numerous other episodes of Scripture history were depicted, the effect of which on a primitive and comparatively ignorant people—speaking from an artistic point of view—is incalculable. Up to this point the development of Mediæval architecture has been looked at mainly subjectively, that is, those changes have been principally noticed which were brought about in the artists and workmen themselves, who made architecture what it was owing to greater knowledge, larger and more enlightened views, and a more scientific acquaintance with the true theory of the art. It is quite true that nearly all these changes were to a greater or less extent due to extrinsic causes, but when compared with the causes of development which must now be noticed, it is hardly out of place to call the former subjective, the latter objective. Foremost among these must be ranked the varying local nature of the building materials, which had a most marked influence upon the architecture of a district, for little or no facilities for the transport of materials existed. Hence the materials that were found in any particular district were almost of necessity the principal ones employed in the erection of any building in its locality, and where the stones happened to be small, a character of its own was immediately given to the local architecture by their necessary use. In Burgundy, which is exceedingly rich in good building materials, especially stone, we find that the old architects, aware that they could implicitly trust their materials, were able to give much more projection to their profiles, and generally more accentuation to their work than in other places. It may be stated, as a pretty general rule, that good masons and good working stone exist together. In parts where stone is of inferior quality and not so workable, it is sparingly used, and sharp arrises avoided as much as possible. Where stone is scarce and timber exists in great abundance and of good quality it is worked into buildings in a most picturesque manner, as may be seen in many instances in our own country, but much more frequently in the small towns and villages of Germany. In many parts of Europe, chiefly the north of Italy, Germany, and Spain, neither stone nor wood exist in much perfection, but, on the other hand, the clay is of a very superior quality, and consequently a completely new character is given to the architecture of these districts by the abundant use of moulded and coloured bricks and terra-cotta.

Another of the objective causes of architectural development was conquest or civilisation, as the ideas of construction and decoration brought to a country by a conquering race will strike root, in most cases, and spring up, but the fruit they bear will nearly always be modified and gradually altered from that which was almost universal in the country where the ideas were indigenous. Another cause powerfully influencing the development of Middle Age architecture is to be found in the progress made in sculpture, glass staining, and painting. It must not be thought that these were independent arts, with only an indirect relation to architecture. In Mediæval times the architect was considered to hold the highest place, and every other art was subservient to him, and made to work in with his design and subordinated to it, and he was implicitly entrusted with the carrying out of every little detail. Mr. Slater next proceeded to show in detail the development of sculpture, stained glass, and painting, and concluded his essay by a brief reference to the causes that led to the decline of Mediæval architecture. According to M. Viollet le Duc it began to fall into decay as early as 1260 in France, but it is only in a limited sense he speaks thus. Still, for many years after this only premonitory symptoms of decadence are perceptible throughout Europe, and in Germany and England the period of decay ought certainly to be placed a century later than the date given; indeed, our own country kept altogether clear of the worst vagaries into which the French architects were carried, and maintained a national architecture much longer than any other country. This will be apparent by a comparison of our Perpendicular architecture with the contemporary continental styles. But the causes of falling away are everywhere the same. Architects, instead of rising superior to their art, and mastering it, allowed it to run away with them, and sought, by all kinds of intricate cuttings, curious intersections and mouldings, and—worst offence of all—by masking the real construction, and simulating one which had no existence, to bring about the most startling effects, which, though every one must admit the wonderful skill shown in their production, are yet contrary to the first principles of art, because essentially untrue. And an artist who begins by setting himself deliberately to deceive others in his works, must inevitably end by deceiving himself so utterly as to be unable to distinguish falsehood from truth.

A discussion ensued, in which Messrs. Phené Spiers, G. R. Redgrave, Scargill, Blashill, C. H. F. Lewes, Douglass Mathews, Sulman, and the President (Mr. T. H. Watson) took part, and Messrs. Rhodes and Slater having replied to the criticisms made upon their papers, the meeting terminated.

GOSSIP FROM GLASGOW.

(FROM OUR CORRESPONDENT.)

A NEW broom sweeps clean, and the new Town Council has made a clean sweep for the present of the Municipal Buildings scheme. This scheme was simply to have all the municipal offices under one roof, instead of as at present in several buildings and in several parts of the city—some, as the Burgh-hall and the Chamberlain's and the Town Clerk's Offices, clustering around the Council-chamber in Wilson-street; others, as the Assessor's Office, the Treasurer's Office, and the Office of Public Works, collocating about the Police Office in Albion-street; some together, as the offices of the Lighting, Cleansing, and Fire Departments in College-street; and others again more isolated, as the Sanitary Office in Montrose-street, the Gas Office in Virginia-street, the Scavenging Office in S. Enoch-square, and the Water Office in Miller-street. And "the head and front" of all the Council-chamber itself is only a portion of a building "possessed with double pomp," the one half being devoted to civil affairs, the other to legal. It is probable that such a dispersion of the public offices may be inconvenient; it is certain that it is less imposing then would be their concrement in one building. The inconvenience has likely been experienced, for some time ago a scheme was projected for the continuation to Ingram-street of the building in which is the Council-chamber; but it is evident that no "additions and alterations," however skilfully designed, will compare in convenience or effect with a building planned *ab initio*. Nor would the continuation to Ingram-street have severed the Siamese-twin-like but unnecessary connection between the Municipal Offices and the Legal Courts. The scheme rejected by a majority of the new Town Council was a building for solely municipal purposes, occupying the whole of the east side of George-square, with a frontage of about 250ft., and extending eastwards along George and Cochran-streets about 230ft. to John-street, to which street the frontage would be the same as in the square. As the square measures from east to west about 600ft., a better site for architectural effect could scarcely be had; and as it contains the Post-Office, and is within half a minute's walk of the Royal Exchange, a situation more central and convenient would be difficult to be found. It will be safely inferred by your readers that Glasgow is in municipal buildings much behind most towns in England of similar, and many of even less population. This arises from various causes. One, I dare say, is that art is not indigenous to our stern northern clime—"the Italian brain does not in our duller Britain operate." We are ever ready with our means in the cause of patriotism or philanthropy, but, as "the man that hath no music in himself is not moved with concord of sweet sounds," so our hard, cool intellect is not readily impressed with the influences of art, and we do not pleasantly pay for what we but indifferently appreciate. There are doubtless highly art-educated men amongst us, but municipal buildings is a people's question, a question to be put in this wise: Does the City Hall, Glasgow (perhaps the ugliest building of the kind in the empire), contain as many persons comfortably as does S. George's Hall, Liverpool, and do they see and hear as well in the one as the other? Another cause is, that while the progress of Glasgow has been great and rapid, many of her buildings for the transaction of public business either remain *in statu quo ante*, or have been added to, altered, adapted, or converted—of course the *dulce* never standing in the way of the *utile*, and the architect shielded by that broad ægis of necessity that knows no law. But I suspect the chief reason why Glasgow must in municipal offices remain behind towns of otherwise much less pretensions is that just now she has other and more pressing work on hand. A scheme that architecturally might have been a work worthy of a great city likely received its first impulse from the inadequacy of the accommodation and the inconvenience of the separated situations of the present several municipal buildings; but meanwhile we must dispose of a larger legacy that has been bequeathed to us by "the wisdom of our ancestors"—air and light "at one entrance quite shut out," and the classic Clyde converted into a *cloaca maxima*. We are opening up our wynds and vennels, and so destroying our fever hotbeds and crime conservatories; and we must follow this by doing no more than justice to a noble river, the source alike of commerce to the city marts and salmon to the civic escutcheon. The ratepayers generally may know little about any necessity for new municipal offices, and care less about any reputation that might attach to the city from its chief public buildings; but the death-rate return is a matter of fact that most people can care about, and the state of the river a state of matters that every one with a nose knows of.

Two busts in marble have been recently added to the statuary in the Corporation Galleries—of Graham Gilbert, the portrait painter, by Brodie, of Edinburgh; and of Shakspere, by William Mossman, son of John Mossmann, of Glasgow. The bust of Graham Gilbert was presented by his widow; that of Shakspere is an outcome of the celebration of the great dramatist's tercentenary. The Press Dramatic Amateurs played on the occasion the comedy of "As You Like It," and the proceeds were designed for a bust of the poet to be presented to the city. Competition was invited, and the successful competitor was the young sculptor mentioned. The bust has lain for a long time in Mr. Mossman's studio, as until lately a fit place had not been determined for it. The police force the other day presented to the Police Board a memorial bust in marble of the late chief-constable, Captain Smart. The bust is by our fellow-citizen, Mr. Ewing, and, besides having other merits, has this first quality in a memorial, an excellent likeness.

The half-million, or thereby, consumers of "the best supply of water in the world" have declined to expend £4,000 upon a fountain commemorative of its introduction and of the Lord Provost, to whose sagacity and assiduity they are in a great measure indebted for it. The "Commissioners" had evidently not expected this, for some time ago they advertised for designs for such a fountain, and received about fifty perhaps in reply to their invitation. A fountain half-cost is now to be experimented with, and accordingly "Notice is hereby given," &c., &c., that "competitors are invited to make such modifications or alterations on their designs as may be thought proper, so as to bring the cost of erection within the restricted sum." But architects are not nowadays what they were wont to be. There are I.A.'s among them, distinguished by stars, too, and the I.A.'s Council very properly resolved "That the Commissioners cannot now change the conditions of the competition, and ask a further sacrifice of time and money, but are bound in justice to adhere to the terms of the original advertisement, to proceed to consider the designs given in, and to award the premium of £50 to the best." The Commissioners' reply was briefly "That the terms of the original advertisement would be strictly adhered to in awarding the premium." Among the terms of the original advertisement were—the cost to be from £2,000 to £4,000; competitors to state the probable cost; and "the design to be shaded with Indian ink, and *none will be received which are otherwise coloured.*" "The terms of the original advertisement" may "be strictly adhered to in awarding the premium," but certainly they have not been very strictly adhered to hitherto. These terms distinctly state that no design coloured otherwise than by shading with Indian ink will be received; nevertheless the Commissioners do receive, and actually exhibit, designs in not only colours of all kinds, but also in photograph, pencil, engraving, chalk, and even cast-iron. This out-Wallace-monuments even the Wallace Monument, and adds one more illustration to the history of competitions. Although a fountain to cost £4,000 is not now to be built, justice requires that this condition of cost be no less "strictly adhered to in awarding the premium." There are competitors who may be bound as little by the terms regarding cost as others seem to have been by the terms regarding colour, and he who conscientiously limits his design by the sum to be expended is evidently at a disadvantage with him who cares not for the addition of a statue or a story if it only helps to the obtaining of the prize. In this competition all may be as pure as the water with which it is associated, but "we cannot but remember such things were;" and it may be reasonably supposed that those who could flagrantly violate one term would not be nicely scrupulous about the violation of another. Another important consideration in the awarding of the premium is the fitness of the design for a certain situation. This condition is as binding now when the intention is abandoned as it was when it was expected that the fountain would be erected in the West End Park. A good fountain *per se* may be a very different thing from a good fountain in connection with its surroundings. A fountain excellent in a "square" may be out of place in a garden. Indeed, before the premium is awarded perhaps the question ought to be entertained, "What is a fountain?" Is it a mere *jet d'eau* issuing from a gigantic saucer, or a basin poised by a group of naiads; a classic temple under a shower, or a Gothic cross bestriding a pond; a Nereid with her back hair in waterfall, or Neptune with his umbrella turned inside out?

It is to be regretted that the originally contemplated fountain is not to be erected. Public works of art are in Glasgow not too many, and his share of the sum sought could not be very much to the consumer. But I fear that the fitting time has been allowed to slip past. As Shakspere says, "we must take the current when it serves, or lose our ventures."

OPENING OF A NEW RAILWAY IN SCOTLAND.—On Saturday the City of Glasgow Union Railway was formally opened by trains running over the full extent of the line. The passengers were the Lord Provost, the magistrates, and other official personages, with the directors of the railway. The new line is intended to connect the whole railway system of Glasgow, though only the North British and the Glasgow and Southern Companies have carried out the undertaking. The Messrs. Brassey are the contractors. It is believed the Caledonian Company will soon become a co-proprietor. The line will be worked by the Glasgow and South-Western Company, their trains running into the fine station in Dunlop-street. The passenger traffic commences on Monday.

THEORY OF THE ARTS.

Art Education.

(Continued from page 292.)

A RATIONAL method or process, proceeding from the concrete to the abstract, beginning with the exercise and improvement of the faculties of sense, and gradually ascending to the higher mental and moral faculties of our nature is, I conceive, the only reasonable one to pursue, both as regards the means of art education as well as in a technical sense in determining the values of the component materials and art processes constituting fine-art combination or architecture proper. Historically, and in a physico-geographical sense, we have already seen the same growth or development. Laws of body and mind regulate and determine social laws or society, for without biology and psychology the interpretation of social phenomena is found to be impossible. Conversely also, the laws of art progress I have sketched resolve themselves into laws of body and mind. It has been shown conclusively by some of our most philosophic thinkers that the phenomena of intelligence conform to laws; why not, then, make the course of education conform to the same? As I have said, it is the bane of late systems of school discipline that indirect means to knowledge precede the use of direct means—namely, that books, and forms, and symbols are thrust into the hands of students before that spontaneous early development of the faculties of observation, or that immediate cognition which the eyes and perceptive organs require first. Thus, also, facts and things are often placed last in the curriculum of knowledge when they should have come first, and factitious knowledge is learnt before that which nature teaches. Definitions, rules, principles, and all generalised or abstract conceptions, must follow in the order which the laws of mind and growth in knowledge require. If it had been so we would not be repeating in this century the literal and obsolete, while the spirit and beauty of universal principles are neglected in all our art work no less than in all our modern acquirements.

The foundation of correct taste, indeed, depends on the proper connection of our faculties and knowledge, the intellectual and moral senses. There is a proper order or process of the mind in judging correctly of the beauty or appropriateness of a thing, as there is in a simple process of reasoning from certain premises and facts. The conclusion in either case must not be foregone. When we say such a thing is a matter of "taste," we are too apt to think it equivalent to fancy or caprice. This laxity in the use of the term has been detrimental to the interests of art education. It is true there is a diversity of tastes or opinions, but there can be only one standard of truth or falsehood. The diversity really is the difference of education or, I would rather say, *mental discipline* in different people. Architects' tastes in the present day differ materially, and people are apt to believe such a diversity among a class of men professionally educated for architects must be the result of an innate feeling for art being wanting more in some than others, or they imagine "fancy," or "caprice," or "whim," an indefinable faculty, to be the sole arbiter But when we come to think of such a conclusion there is little to raise our art in the estimation of society. Unfortunately, however, such an estimate of architectural taste is supported by the professors of the art itself. An acquaintance, however superficial, with one particular period or style, founded in most cases upon an archæological study, is sufficient often to get an architect a reputation, especially if he have a chance of embodying his favourite studies in a building or work of pretension. Further than this, there may be no abstract nor specific merit in his design whatever. But to resume, my theory would imply degrees of mental power rather than a preponderance of one faculty over another—in fact, a state of culture hardly ever attainable in the same individual. It is just this nice adjustment of power and knowledge that is wanted; and the regulation and appointment of our studies according to such a test of actual value as I have propounded, seems to be the only way to insure this. Corresponding with such an apportionment or subordination should be our branches of art work, beginning with utility and material as the lowest but primary motive and means—the basis of all art—and ascending to the ulterior ends of art labour—beauty and the gratification of correct taste. In an architectural work, its purpose being pre-determined, every function and art employed in its erection or composition should be rightly determined and estimated in the structure, instead of being left to the chance or the whim of the designer. Thus, in a building subserving public convenience, the apertures for entrance and exit and light should determine in every respect the character of the design and its ornamentation, and not be arranged in a sort of half-way to meet the latter, as is often found; for example, a large apartment requiring a large amount of light or entrance, sharing a smaller proportion of these essentials than another much smaller apartment, for no other reason than to get a certain crotchet or idea of fenestration externally in elevation. A certain license may be pleaded in cases where a *sufficiency* of essentials is obtained, but the limit of toleration should invariably be regulated by a just regard of the essential conditions of the structure, and never be allowed to exceed that agreement which the mind no less than the eye detects. The senses rebel against a violation of those laws or conditions necessary for the enjoyment of life, the exercise of daily duties, thought, or imagination; and yet these laws are constantly broken in the arrangement and construction of public and private buildings, under the designation of architectural style or taste. In art of the kind under consideration, the demands of utility are so various, the conveniences of communication, light, and air so necessary, that æsthetical considerations become more than ordinarily irksome to one bent upon giving his design artistic pretensions, especially when at the same time his means are limited. To one who proceeded rationally, and according to the order I have laid down, the æsthetic would evolve itself out of the conditions instead of being forced upon them. In short, a complex architectural composition or building should be the concurrence and manifestation of certain laws; these laws, reduced to their simplest expression, being corollaries from the laws of body and mind.

In my last article I will endeavour to simplify what I have in the preceding papers advanced by a synoptical view. It must not be considered, however, that such a gradation in the different branches of art workmanship, implied by such an order in the relative values of essentials, would at all lessen the true position of æsthetics or architecture as a fine art. Far otherwise. It would give it a scientific basis—one founded on immutable laws instead of mere fancy—while it would lift the profession above the reproach that it merely gratifies a taste for the superfluous, and cannot take its position as a really necessary calling.

G. H. G.

◆

FRESCO PAINTING.

IN his fourth lecture (Cantor series) at the Society of Arts on Monday evening last, on Artists' Colours and pigments, Mr. F. S. Barff, M.A., made the following observations on fresco painting:—

Experiments in fresco painting have been made in this country of late years, but from the results of those experiments I am very much afraid that many of us have formed wrong impressions about the art. We have seen that in really choice situations the frescoes have become disintegrated, the colours have gone, the surfaces have come off either in flakes or in powder. If you visit the city of Munich, and go to the Church of S. Bonifacio, you will see that it has been decorated by Professor Hess in fresco painting, more than thirty years ago. The paintings there are standing well, and have stood well, except where moisture has come in from behind, and has thrown off the painted surface from the front. Now, no painting, whether executed in siliceous colours or fresco colours, can withstand the action of damp penetrating from behind; it is simply impossible. Why I speak with confidence about fresco painting is that because some twenty years ago a large public building was decorated in fresco, and Munich artists were employed as well as English artists. That building I have not seen for many years, but I have been told by several gentlemen that it is still in a state of perfect preservation. The fresco is in no way disintegrated, either in the ornamental or pictorial portions. I can speak with confidence of fresco painting when it has been executed in the way it was done by those gentlemen. I will, to the best of my ability, mention to you the method in which I was taught fresco painting in Munich, and speak of those influences which are likely to interfere with the permanence of pictures painted in fresco. But first of all I must take you aside for a few moments to another subject, though one intimately connected with this. When lime is mixed with sand, and used for building purposes, it is called mortar. How is it that mortar, which is soft when it is first laid, becomes hard in the course of time? The lime acts upon the sand, dissolves some of the silica of which sand is composed, and so a silicate of lime is formed, and this silicate of lime causes the binding power of the mortar. The ground upon which fresco is painted is a lime ground. In order to have a permanent picture, it is clear that we must have a firm and stable ground. In order to prepare the ground, first of all the wall must be absolutely dry. There must be no leakage of moisture from behind. Then lime which has been "run" (as it is technically called by builders) for a year or a year and a half is the best to be employed, for in proportion as the lime has become carbonated by the action of the carbonic acid of the air (up to a certain point) it makes a better and harder mortar for coating the wall with. With this lime must be mixed sand, and there is a great deal in the selection of the sand. It must be river sand, and should be equal in grain. The sand should be mixed with water, and allowed to pass along down a small stream, so that in the centre of the stream you would have sand the grains of which would be pretty equal in size. This is a point of considerable importance. The reason why new lime cannot or ought not to be used is that it "blisters," as builders term it, and this would be ruinous to the picture. A well plastered wall for fresco painting should not have a fissure or a crack in it. There is no chemical process that I know of that takes place in fresco painting other than this—that you get a silicate formed by the action of the lime upon the sand, and a carbonate formed by the action of the air upon the lime. In painting a fresco picture, there is no such thing as retouching work after it is finished. The artist will have to make his sketch with the greatest possible accuracy. The cartoon is made upon ordinary paper, and then oiled. It is then fixed upon the wall to be painted, and the part which the artist desires to begin upon is uncovered—that is, a portion of the paper is cut away, and then the plasterer plasters for about $\frac{1}{8}$in. upon the wall. The plasterer's work is of the greatest importance in fresco painting. The man who does it ought to practice well before he is allowed to prepare any portion of wall for the painter. In that way he will become accustomed to the suction of the wall, and upon the suction of the wall depends the success of the fresco. When the plaster is first put on of course it is very soft. The piece of the cartoon is replaced upon the plaster, and then the lines are gone over with a bone point. The artist then commences his painting. At first when he paints, the colours work greasy; you cannot get a tint to lay on; it goes streaky; but paint on, but only for a certain time, for if you go on painting too long you will interfere with the subsequent suction of the ground. This is essentially necessary for the successful practice of fresco painting, but it can only be learnt by experience. You know by the feel when you ought to stop. If you feel your colour flowing from the brush too rapidly, you should leave it and return to it afterwards. As the water sucks in the colour is laid, and in the course of half an hour or an hour [you will find that there is a pleasant suction from your brush — you will find that the colour will cover well; and this is the time to paint rapidly. When the colours leave your brush as though hungering for moisture, then you should cease painting, for every touch done after that period will dry grey. It is impossible, therefore, to paint frescoes in the same style that you would in oil. The fresco paintings of the old masters were not highly finished. Their effects were got by juxtaposed tints; their shadows were got by lines and coarse etchings. I know well how tempting it is to go back to a piece of painting and do something to it that ought to have been done before. But in fresco painting this temptation must be resisted, for it will be absolutely fatal to the permanency of the work. It is not for me to find any fault (as works of art) with the works of the great artists who have painted in fresco in this country, but as regards the mechanical work of their paintings it cannot have been done properly, or the frescoes would not have become so rapidly and thoroughly destroyed as many of them have, for many of them are in situations the most excellent for fresco—on inner walls, in dry places, where they are not influenced by the percolation of moisture from behind, nor by the condensation of vapour in front. Mr. Barff concluded his lecture by an enumeration of the colours and pigments most suited for fresco painting, the list of which will be published when the lectures appear at length in the *Society of Arts' Journal*. In his concluding lecture, on Monday evening next, Mr. Barff will refer to siliceous painting, a method of wall decoration which, for durability and facility of execution, he considers far preferable to fresco.

◆

ENGINEERING IN INDIA.

FROM official papers which have been submitted to the Secretary of State for India, prepared by Major G. Chesney, R.E., and Mr. W. T. Thornton, Secretary in the Public Works Department, it appears that the staff of the Indian Public Works Department comprises 237 Royal Engineer officers, 126 other military officers, and 533 civil engineers, making a total of 896, and that at least forty or fifty civil engineers must be sent out yearly from England to maintain the Department at its present strength. No very large supply can be expected from qualified natives of India. The scheme now adopted, it is expected by its authors, may widen the field of competition. The test for admission to the service is to be in general subjects of education (including mathematics), and not in technical ones, and is to be open to all comers. The successful candidates will then enter on a course of study and training extending ordinarily over three years. There will be periodical examinations, and the qualifying standard of proficiency fixed for each year is to be attained by the students at the end of the first and second year, failing which he will not be allowed to remain at the college. The final examination will be held at the end of the third year, and will comprise engineering, mathematics, physical science, and languages; and all who attain the prescribed qualifying standard will be despatched to India as assistant engineers of the second grade, the salary of which grade is 4,200 rupees (about £420) per annum. Part of the last of the three years will be spent under a civil or mechanical engineer, whose fee will be paid by the Indian Government, the student receiving an allowance of 5s. per day. The fees payable at the college are at the rate of £150 a year, which includes the charges for board and lodging. The salaries in India range from the 4,200 rupees with which these assistant engineers will commence, to 30,000 rupees for chief engineers of the first-class. Promotion is wholly by selection; mere seniority is considered to confer no claim to it.

◆

SCHOOLS OF ART.

Leeds.—Lord Houghton distributed the prizes at the annual meeting of the Leeds School of Art on Friday last. The report of the art division showed the number of pupils who have attended during the year to be 326, against 255 in 1869—an increase of 71 pupils. These numbers are exclusive of those pupils taught in the day schools. Number of pupils at present under instruction in the boys' school, 80; girls' school, 146; total 226; thus making a total of 552 pupils under instruction of the art masters in this institution. The average attendance in the school of art during the present quarter has been 120; the number of students who have entered for the present quarter being 210 against 165 in the same quarter of 1869, an increase of 45 pupils. A new class has been formed in addition to those in existence at the last annual meeting, viz., an afternoon class (Wednesday). The examination, which took place in March last, was upon the work completed and taught in the school for a period of eight months only, the greater part of this being of an elementary character, the advanced pupils with their work having been taken from the school by the late Head Master before the new arrangements were completed. The results, therefore, as will be seen from the following figures, show an increase in the successes of the elementary or second grade examinations, but a decrease in the advanced or third grade examinations. Second Grade Examinations—Number of papers passed in 1869, 123; 1870, 133: number of prizes awarded, 1869, 28; 1870, 38. Third Grade Examinations—Number of sets of drawings, satisfactory, 1869, 67; 1870, 30: number of prizes awarded, 1869, 19; 1870, 9. The examination of the third grade consists of the works of the students made during the preceding year, which are forwarded to the Science and Art Department in London. The above figures therefore give only the result of eight months' accumulated work, from the time of the appointment of Dr. R. C. Puckett as head master of the school. The examinations in practical, plane, and solid geometry, machine construction and drawing and building construction have for the first time been held in connection with the Science Examinations in May. Eleven pupils passed in these examinations, obtaining four certificates in practical, plane, and solid geometry, five certificates in machine construction and drawing, and six certificates in building construction. The committee feel that so far as the work of the school is concerned, the principle adopted in August, 1869, by appointing a master whose duty was confined entirely to the work carried on in this institution, has proved highly successful.

Newcastle.—The annual meeting of the friends of the Newcastle-under-Lyne School of Art, was held at the Guildhall, Newcastle, on Thursday week. The Rev. Sir L. T. Stamer, Bart., presided. The report of the Head Master states that the school has continued to progress during the past twelve months. In the month of March the annual examination in freehand, geometry, perspective, and model drawing was held. Twenty-two students were examined; 11 passed and three obtained prizes. The drawings of 39 students were sent to London in April for examination. The works of 37 were satisfactory, four prizes were awarded. A bonus of £10 has been awarded to the master in accordance with their Lordships' minute of 1868. A private class was opened in March, and meets two mornings in each week.

Newington.—Mr. Locke, M.P., distributed the prizes to the students of the Newington School of Art on Tuesday evening last. He said he had known great numbers of men who had risen from the lowest ranks of mere mechanics to the highest position by devoting themselves not merely to the manual exercise of their calling, but to the laws and rules which regulated it, so gaining a perfection of handicraft they could never have otherwise possessed. He added that if the working classes came forward in a body, and, by means of the scientific help afforded them by the Government, raised themselves to the position they indeed ought to occupy, they would be not only the most laborious, industrious, and well-behaved class of men in the whole world, but they would effectually prevent the taunt being ever thrown at them that there was any other nation in Europe which could excel the productions of their handicraft.

West London School of Art.—The annual meeting for the distribution of prizes to the successful students of this school was held on the 8th inst. at the school, 204, Great Portland-street. Sir M. Digby Wyatt presided, and there was a large attendance of students and their friends. Mr. Stuart, the master, read the report, which stated that during the past year the number of students in attendance was 479, being nearly 100 more than in the previous year. The number of students had been steadily increasing, so that they now occupied the position of the sixth largest school in the kingdom. The success of the school in all competitions was also lorgely increasing. In 1869 the students of this school obtained 48 prizes of all kinds; in 1870 they obtained 112. The character of the work done in the school was also improving. One of their advanced students, Mr. James Rowley, had gained a South Kensington scholarship of £50 a year. The chairman said that on looking over the statistics he found that this school was by far the largest in London, and it would be disgraceful if it were not, seeing that it was in the centre of the district in which the greatest interest was felt in the arts. The only school which offered a complete parallel to it was the Edinburgh School, which had 459 students; and in the rewards which were obtained from the Government, which was the best test after all, they were nearly equal, one school receiving £103, and the other £116. But when they came to the higher prizes the Edinburgh School was far ahead of this. In comparison with other English schools, and particularly with that of Manchester, this school was far ahead; but the number of students in this school, instead of being nearly 500, ought to be 1000. Unless there was progress they would not be able to stand competition, particularly against those foreigners who studied constantly and profoundly. He impressed upon the students the necessity of perseverance, and pointed out that it was a mistake to suppose that a few months' attendance at that or any other school would enable a workman to complete his education in art. Mr. J. G. Crace, Mr. Donaldson, Mr. Peter Graham, and Mr. Hubert, also addressed the meeting.

◆

Building Intelligence.

◆

CHURCHES AND CHAPELS.

Barnard Castle.—S. Mary's parish church, Barnard Castle, was reopened on Thursday week after restoration under the direction of Mr. F. R. N. Haswell, architect, of North Shields. The west door has been built up and a new large west window has been made in place of the old one at the west end of the nave. The east wall of the chancel has been re-erected. The roof has undergone thorough repair, and the two unsightly galleries have been taken down. The whole of the old sittings, &c., have been removed and supplied with new ones. The new gas-fittings are by Thomason, of Birmingham. The work has been executed by various local tradesmen, at a cost of about £4,000.

Biggleswade.—The church of S. Andrew, Biggleswade, which is a fine example of Perpendicular work, has recently undergone a complete restoration under Messrs. Habershon & Pite, architects, of 38, Bloomsbury-square. Inside and outside the whole of the plastering has been removed, and most of the windows have undergone complete renovation. The roof, which is remarkably rich and elaborate in its details, is entirely panelled, the ribs being continued each side down to the clerestory windows in triple shafts resting on stone corbels, which have been carved by Messrs. Hibbins & West, of London. The western gallery has been removed, throwing open the tower, in which a fine window has been opened out. A capacious organ-chamber has been built in the north aisle, thus continuing the nave arcade and improving the appearance of the church internally as well as externally. A new stone pulpit has been provided, executed by Messrs. Wade, of St. Neots. The church floor is laid with Ridgway's tiles. The old deal boxes have been removed, and light open benches have been substituted, affording sittings for a thousand worshippers. The timber work throughout is of pitch pine. The church is heated on Marriott's patent hot-water system. The contractors were Messrs. Edey, of St. Neots, the contract amounting to £1,957. Mr. R. Blackwell acted as clerk of the works.

Birmingham.—The Unitarian Domestic Mission Chapel, in Hurst-street, which has recently been enlarged and almost rebuilt by Messrs. Cresswell & Sons, from the designs of Mr. A. B. Phipson, architect, at a cost of £1,200, was reopened on Sunday last.

Broad Blunsdon.—S. Leonard's Church, Broad Blunsdon, Wilts, was recently reopened after restoration. The work was entrusted to Mr. E. Smith, builder, of Highworth, the approximate total cost being £1,150.

Carlisle.—The new church of S. Paul, Carlisle, has lately been consecrated. The edifice stands in an open space of ground, bounded on all four sides by streets or roads. Newbiggen redstone is the principal material employed, the roofs being open timbered, high pitched, and covered with green slates, the windows being Geometrical as to their tracery. The church comprises nave, north and south aisles, and chancel. The seats are open benches, each bench having a very useful feature in the shape of an umbrella-rack or stand at the end; sittings are provided for 600 persons. A tower and spire are to be added at some future date. The various works were executed by local tradesmen in branches, the architects being Messrs. W. G. Habershon & Pite, of Bloomsbury-square. The total cost has been £3,700.

Manchester.—On Wednesday week a new Congregational Church in Greenhill-street, Greenheys, Manchester, was opened. The style of the building is an adaptation of Italian and Gothic. It is of brick, with stone dressings, and will accommodate about 800 persons. The outside measurements are: 69ft. long by 48ft. wide, exclusive of vestries, porches, and organ gallery. The contractors were Messrs. Swindells & Little, of Hulme, and the entire cost has been about £3,500. The whole of the works have been carried out from the designs and under the superintendence of Messrs. Woodhouse & Potts, architects, Oldham.

Norwich.—The church of S. Mary Coslany, Norwich—a fine specimen of fifteenth century work, comprising nave, north and south transepts, chancel, and tower at west end—is proposed to be restored. The present ugly pews are to give place to open benches of pitch pine, and the floors relaid with wood and tiles worked in between the monumental slabs. The present pulpit is to be carefully restored and refixed, and the unsightly west screen is to be removed from the chancel and refixed in its former position. The churchwardens have commissioned Mr. Edwin Bays, architect, of Downing-street, Cambridge, to prepare plans, &c., for the work, which will be proceeded with as fast as the funds will allow of.

Ospringe.—The chancel of Ospringe Church, Kent, has been very artistically decorated by Messrs. Holden & Son, of Lamb's Conduit-street, after designs prepared by the architect, Mr. E. L. Blackburne. Masonry interspersed with bands of various patterns forms the ground of decoration on the walls, with Gothic drapery on each side, and the east wall is further enriched with Gothic drapery bearing the sacred monogram. Above the east window are angels in the posture of worship, and on the jambs of the window are figures of the patron saints—Peter and Paul. The Tudor window on the north side bears the Tudor badges (pomegranate, Tudor rose, and portcullis) in the blocks of masonry, the other windows and arch having pateræ in the blocks of masonry. The sedilia on the south side has been ornamented with a canopy. The tone of colours used throughout is soft, and has a very pleasant effect.

Prittlewell.—A considerable effort is being made to remodel the peal of bells in the parish church of Prittlewell, near Southend. The tower and church, which are about to be restored (we believe under the direction of Mr. Ewan Christian) date from the twelfth century. The tower itself is the finest in South Essex, if, indeed, it can be surpassed in the county, and is a landmark for ships far away at sea. There are now six bells, the three oldest dating respectively 1600, 1603, and 1660. These are hopelessly injured, and require re-casting. It is intended, with a small addition of new metal, to cast them into a peal of eight bells. The framework, gear, &c., are rotten and dangerous, and require to be entirely renewed. For this purpose a sum exceeding £300 will be required. There is an old tradition in the neighbourhood that the bells of Prittlewell Church came from Rochford Church in exchange for the market which was taken from Prittlewell to Rochford in the time of Anne Boleyn, who, in her seclusion at Rochford Hall, disliked the sound of the bells. It is true that in Rochford tower there is a framework for four bells, three of which have disappeared, but as the oldest bell in Prittlewell tower dates 1600, and Henry the Eighth's reign ended in 1547, this popular delusion has no foundation whatever.

◆

A new building for Hessle Church Institute was opened on Monday week.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

To Our Readers.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

Letters relating to advertisements and the ordinary business of the Paper should be addressed to the EDITOR, 31, TAVISTOCK STREET, COVENT GARDEN, W.C.

Advertisements for the current week must reach the office not later than 5 p.m on Thursday.

Received.—G. G. H., G. W., E. S., W. D., J. T. & Son, J. M. S., J. W. W., R. D., W. B , D. Brothers, M. G. & Co., G. C. E., J. Brindley, Robt. Donan, C. W. G., M. & Co., J. W. R., G. D., R. C., W. B., J. D. K., Rev. W. E. J., G. W. M., B. & Co., F. B. L., I. & A. E. B., J. P.

H. A. L.—"E L. G.'s" sweeping charges deserve a fuller and better answer than yours.

Inquirer.—The series of articles on "New Elements of Hand-Railing" commenced in No. 819, Sept. 9.

C. N. Tripp.—Sketch returned.

Rev. J. Parker.—Your letter next week.

Gilbert R. Redgrave.—Your letter next week.

Sketches returned.—W. C. N. Tripp, John Reed, jun., J. E. Dunn, James Rogers, S. J. Newman, F. Waghorn, W. T. Brown, W. L. Grant, H. J. Creswell, J. B. Marsh, James Jarman, jun., James Doyley, and J. R. Walker.

J. H. T.—The Sketch Book will consist of sixty plates, and will be published early next year.

P. Auld.—Thanks for your title page for Building News Sketch Book;" if not superseded by a more suitable one it will be used.

◆

Correspondence.

ARCHITECTS' CHARGES—RESTORATIONS.

(*To the Editor of the* Building News.)

Sir, — The letters of your correspondent "E. L. G." are always well worth reading, as they evince the mature views of a man deeply versed and deeply interested in the matters about which he writes, and though he, perhaps, evinces a little too much warmth in the purely denunciative part of his letter, judicial calmness is scarcely to be expected from an enthusiast bent on the removal of some generally acknowledged evils, and if I fill up the initials rightly the evils he seeks to destroy have been the subject of his attacks for many years, unfortunately without much success. In his present letter there are three several points of attack; the first against want of ventilation, the second against the method of paying architects, and the third against the so-called restoration of old buildings.

I propose to take his second objection first.

Architects themselves are fully aware of the objections to the present system of payment, groan under its insufficiency, under the contumely that it throws on them, and under the loss and degradation it involves, and would welcome with delight any system that could be devised for paying them properly, that would also spare them the haggling, loss, and probable law-suits that other systems seem to involve. In spite of the contumely which is with such unsparing hand poured out on our profession, I think, could we agree to be paid in a more satisfactory manner, that the alteration would cause a great pecuniary gain to us, for as far as it has been in my power to observe the architect is only too ready to sacrifice himself for his client.

When architects have risen to a sufficient eminence to command the market, many of them do decline to be paid except at their own valuation of their work; but amongst those who are not so well known, how is it possible to struggle against a payment with which the public is acquainted, and which, if exceeded, is made the subject of angry recrimination or of a threatened law-suit? Law in this country being a luxury for the rich, must be avoided by prudent men who cannot afford luxuries and do not wish to be ruined, and it is useless to inveigh against a practice if you have nothing practicable to propose in its place.

A jury of experts provided by the Institute might possibly assess the value of work, but with so many discordant views it would be difficult to find the men with the skill to decide on each man's particular work, and when this was done what is to give it the force of law?

There can be no doubt the percentage system greatly conduces to mediocrity of work, for an able man sees that when he has once got a reputation nothing is to be gained by greater skill. To increase his income he must multiply the number of his works; all increase in their goodness by extra labour and study is solely so much money out of his pocket. Could an architect be paid for his extra study or skill, or what not, as painters are, his aim, like theirs, would be rather to produce more excellent works than to produce more ordinary ones.

It is not to be supposed that very many architects do not strive to produce excellent and perfect works, but in doing so they feel that they are indulging themselves in a costly luxury, and that their virtue must be strictly its own reward.

I dismiss the oft-repeated statement that architects are by the present system induced to cause lavish expenditure to their clients for the sake of their own percentage with the contempt it deserves. There are men in all callings who "would burn down their neighbour's house to roast their own eggs," but as a general rule it is as untrue that architects increase the cost of buildings for their own sake as that doctors do not try to cure their patients to increase their own fees. This sort of charge only comes from the most ignorant and basest of mankind. Architects, like other men, desire to live by their calling, but such is the universal desire of mankind to create something that is convenient or beautiful that architects are often only too glad to do their work for nothing if they can see their designs actually executed.

As regards ventilation, the answer is simple: an unventilated lamp will not burn, one that is badly ventilated gives a bad light, and every one can judge of it; but this is not the case with a room, and the reason rooms are not ventilated is that the occupiers do not care about it, and will not pay the cost of ventilating them properly. The idea is in advance of the age, and if "E L. G." has built many houses, he will know that the owners say they are quite satisfied with an ordinary fireplace and window; and seeing that the subject has been treated of by philosophers and inventors, without any particularly successful results, there is quite enough failure to discourage the general public. If "E. L. G." will tell us how to ventilate a room without causing draughts, and will show us that he has successfully persuaded many of his clients to build an extra flue to each room for ventilation, he will show architects the way to follow his example. The public hardly require his vehemence of denunciation to believe them neglectful, incapable, and useless. If I mistake not Vitruvius found his public as we find ours.

As to the so-called restorations, it is only too palpable that a nineteenth-century man cannot restore any work of a former age, that requires restoration; repairs apart, if it be worth restoring, at the best he can but make a plausible guess, and at the worst he can but substitute something, if possible, worse than the original; but it is open to question whether any of the work restored in this generation was worth preserving, except as an historical record. If "E. L. G." thinks it was not worth preserving, he should impress this fact on those who call for the restoration rather than on those that do it, for if those who want it restored are not restrained, restorers, good, bad, or indifferent, are sure to be found, and if they are not architects they are usually worse than architects. Occasionally, the general effect of a well designed building is spoiled, not by restoration but by alteration. Not long ago a drawing of a restored church, with the unrestored one, was engraved in your paper, showing how the original had been spoiled; and I saw at Angmering a well-designed tower spoiled by a great cusped window being put in the middle of the tower, making it look as if it had a set of teeth in its stomach, and utterly destroying the proportions of the tower; but generally restored buildings are not much worse than they were before.

Archæology is generally mistaken in England for art. We happen to be an artless race in an artless age, but it is doubtful if architecture is much worse or less original than the other contemporary fine arts. Standing with your back to the entrance and looking down the station to the bridge, it is doubtful if there are many more impressive buildings than the Cannon-street Station.—I am, &c., G. Aitchison.

THE INSTITUTE AND THE STATUS OF ARCHITECTS.

Sir,—It has struck me as sufficiently curious that although so much has lately been written in your pages, and those of other professional journals, about the shortcomings of the "Institute" and its presumed inefficiency, yet no one seems to have noticed that which appears to me to be the one means by which that highly respectable body might atone for the error of its ways, and prove its usefulness to the profession in general,—I mean the endeavouring to form the great body of British architects, which it supposes itself to represent, into a legally organized and embodied profession.

If this is in any way desirable — and I think there can be no doubt that is *very* desirable—the Institute is clearly the proper body to take steps in the matter; for, small and incomplete though it be, it is yet the nearest approach to a representative body now in existence; and I feel confident that energetic measures taken with this object, and with any reasonable prospect of succes, would do more to right it with the profession than years of "soirées," and Voluntary Examinations, and respectable small-talk over coffee in the evening

The architect's profession ought not to be an open one. It is simply a disgrace to the competent members of the profession that any person who chooses may write "architect" after his name; and I fully believe that this has a great deal to do with the disrepute into which the profession has fallen with the general public. We ought to have a body legally authorized to admit those persons whom it shall find competent to the rank of practising architects, and to exclude all those who may be found incompetent. The public would then have some guarantee against inefficiency and vulgarity, and, more important still, against dishonesty and underhand practices; and the professional man would feel more self-respect, and a greater confidence in his brother architects, and would, moreover, be protected against the consequences to himself of unprofessional practices on the part of others. We should then hear no more of sharp builders' clerks, whose knowledge is confined to getting out quantities, and perhaps making a decent geometrical drawing, establishing themselves in all the glory of a mediæval brass doorplate, and victimising the too-confiding middle class public of the country town which may be honoured by their residence.

I suppose that all this has been urged over and over again; but as nothing has ever come of it, it may be well to repeat it once more.

I imagine that the apathy of the older and more influential of our architects has always been an obstacle. They make good incomes; they are personally respected by the public; and they, naturally enough, do not see much reason for getting up an agitation which is not likely to affect their position to any considerable extent.

But if the Institute be really that universal and all-protecting representative body, which its officials are so fond of portraying to us,—if its ideas do, in fact, extend beyond its home amusements of coffee and lectures,—then, I say, let it consider the interests and views of the rising generation of architects; let it realise the fact that the men who are now spending their whole time, and no small sums of money, in acquiring a first-class art education, have a right to that protection and that legal status which is accorded to other learned professions. Let it no longer, wrapped in its immaculate virtue, contemplate with placid indifference the struggles and hardships of the men who are now beginning their career; but let it come boldly to the rescue, by inviting an expression of opinion on the subject from the whole architectural world, and I maintain that it will soon find its ranks swelled, its usefulness increased, and its sphere enlarged.—I am, &c., J. B. F.

TO ARCHITECTS.

Sir,—The following choice *morceau* is taken from the *Norfolk Chronicle* of Saturday last, and is, I think, worthy of a place in your columns :—

> TO ARCHITECTS.
>
> TENDERS are required for preparing Working Plans, Designs, and Drawings, with Specifications, and supplying Estimates of Cost, giving out Quantities to Contractors, and certifying works in progress and executed, inclusive of journeys and travelling expenses, with all else pertaining to the erection of three contiguous DWELLING-HOUSES, on the proposed Terrace, Albemarle-road, Norfolk-square, Great Yarmouth, pursuant to Designs and Elevations furnished by the Surveyor to the Town Council, which can be inspected at the undermentioned Offices. Terms in writing to be sent to the office of Mr. Clowes, 3, Regent-street, Great Yarmouth, on or before the 24th of December instant; but the advertiser reserves the right of rejecting any and every tender.

Can anything be more insulting to the professional feeling of an architect than this advertisement? Tenders are required as for a building contract—travelling expenses, and all extras, with bills of quantities, are to be included; and the advertiser may reject any or all tenders at his discretion. Moreover, if any architect should be found willing to pass under the Caudine Forks of this Mr. Clowes, he is merely to carry out designs and elevations already furnished by the surveyor to the Town Council. It can hardly be imagined that any architect will so degrade himself as to tender in this way; but if any threadbare or unscrupulous member of the profession should be tempted to do so, I hope you will give his name such publicity as will induce him for the future to "tender himself more dearly."—I am, &c., Vigilans.

Norwich, Dec. 14.

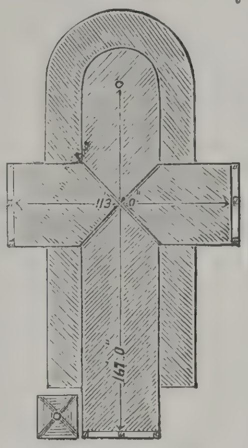
◆

Intercommunication.

◆

QUESTIONS.

[2066] LIGHTNING CONDUCTORS.—As I did not sufficiently explain question 2050 in the Building News of the 18th ult. you will please insert the following :—The diagram shows clerestory and aisle roofs. The building has three gables, and on each are three stone statues, standing 12ft. above the roofs. Over apex is an iron finial, 7ft. high, which is fixed into a wooden kingpost. On south angle is a campanile on which stands a vane. I would be most thankful to "E. L. G." or any of your correspondents by letting me know how I am to fix copper lightning conductors to vane of campanile and finial of apse. Also by giving me full information as to the point most needing protection. —P. N. I.



[2067] HANGING SASHES.—I should feel obliged if you or some one could give me any information with respect to hanging sashes. The plan generally adopted is to hang them with lines and weights, making a box frame, for the weight to run it, and pocket pieces to frame. Could you inform me if there is any other plan adopted, and if so is there any patent for same?—Joshua Lane.

[2068] SEVENTEENTH AND EIGHTEENTH CENTURY ARCHITECTURE.—I should feel much obliged if any of your readers can inform me if there is a book published which treats of the architecture of the period about the seventeenth and eighteenth centuries. The style is, in fact, transitional between the Elizabethan and Italian styles. In one example of this style I have seen there was red brick fluted Doric columns, and all the cornices were of moulded red brick with a stone coping to the parapet, and with windows, mullioned casement nearly flush with the outside line of brickwork. If there is such a book published, where is it to be obtained?—Student.

[2069] THE CYMAGRAPH.—Information where to obtain this instrument and the price would much oblige.—A. I. L.

[2070] COMPETITIONS. – Can any intercommunicative one furnish information *anent* the competition for Congregational church and schools at Gateshead-on-Tyne? also for national schools at Newport, Salop.—T.

[2071] USAGE AND CUSTOM.—Can a client legally demand a detailed measured bill of extras and deductions from the architect and surveyor, or is it optional, and contrary to professional usage and custom? Do architects—acting for clients—even submit to the overhauling of their accounts by a surveyor or valuer, also appointed by the client to test their accuracy and honesty? Would not such a proceeding be somewhat *infra dig.*, and stamp he who submits thereto as a "small-souled fellow"?—F.

[2072] BINDING THE "BUILDING NEWS."—I have had the last volume of the Building News bound and the double-page illustrations have been glued in the centre and are spoiled by being so pressed in. Will you or any of your readers kindly inform me of the best way to bind these illustrations?—F. S.

REPLIES.

[2039] REMOVING INK STAINS.—I have just seen the undermentioned in a publication :—"To remove ink stains from a book, first wash the paper with warm water, using a camel's-hair pencil for the purpose. By this means the surface ink is got rid of; the paper must now be wetted with a solution of oxalate of potash, or, better still, oxalic acid, in the proportion of 1oz. to ½ pint of water. The ink stain will instantly disappear. Finally, again wash the stained place with clean water and dry it with white blotting paper." No. 2. A very weak solution of salt of lemons will remove ink stains, the part washed to be copiously wetted with clean water as soon as the ink disappears, or the solution will burn the paper; dry with white blotting paper.—Ansell.

[2039] REMOVING INK STAINS.—If the stain be recent it can be readily removed by covering it with a little powdered oxalic acid (salts of lemon), and then letting a few drops of water fall on to the powder. It may be useful to know that grease spots can be entirely removed from paper by a few applications of powdered pipeclay.—R. L. B

[2047] TAKING OUT QUANTITIES.—This, as correspondents must know, is a very vexed question. Metropolitan custom holds the surveyor amenable for any sin of omission. Quantities are usually paid for upon receipt of instalment No. 1. Instances of payment being made at signing of contract, as "D. D." has it, are somewhat rare; so are those where a moiety is paid upon signing and the other at receipt of first instalment. The first instalment may, I think, be considered the rule; another exception is when it is spread over two instalments to accommodate the contractor, this in the event of his having to pay direct, and yet another exception *when it is not paid at all!* Provincially, if a contractor employs a surveyor on his own account—a frequent case—the master, I opine, is responsible for the servant's errors—such being under these circumstances their relative position—and must fain content himself with the good and bad as it occurs. The fact of decreased remuneration materially strengthens this view of the relationship.—F.

[2051] ARCHITECTS AND THEIR PUPILS.—It is usual for architects to allow their pupils four weeks' vacation in every year at least—many give more; but to prevent differences of opinion arising a clause to that effect should invariably be inserted in the articles. Very few architects withhold payment for sick days. *Experientia docet.*—F.

[2062] ORIGIN OF PULPITS.—Nehemiah, Chapter VIII., verse 4 :—"Ezra the scribe stood upon a pulpit wood."—H. Radbone.

[2062] ANTIQUITY OF PULPITS.—The solemn reading of the law of Moses to the populace of Jerusalem must have been an impressive service, when "Ezra the scribe stood upon a pulpit of wood which they had made for the purpose." As to its configuration we are not informed, though it must have been a spacious raised platform if the six persons named on one side of Ezra and the seven on the other were also upon it. Stone pulpits existed in some cathedrals, churches, and monastic refectories; and one of iron is mentioned in the Galilee at Durham. Entries at Exeter, 1318-25, relate to materials "*pro la pulpytte,*" but that was a distinct building on the north side of the church for lectures and sermons. Capitals and bases for the ambos at Westminster were paid for in 1352. Preaching appears to have been a part of religious services from the earliest ages of the church; and the sermons were commonly delivered in the chancel in front of the altar. At a later time they were addressed from the ambo or reading desk in the nave, an innovation assigned to Chrysostom at Constantinople. In some churches the preacher used to sit and the congregation to stand, and generally the lecture was more of the extempore kind than now prevails. The orderly conduct of a modern congregation results from the discipline of ages; having succeeded by gradual process habits of comparatively little decorum and the open expression of opinion on the merits of the preacher's discourse. The rarity of wooden pulpits of earlier date than the Reformation is no doubt principally attributable to the sweeping clearance of church fittings pursuant of that event, just as with altars, and roods and screens. Yet they, one and all, are met with in modern Papal churches where the presence of either can scarcely be due to the Reformation.—T. M.

[2064] EMPLOYERS AND CLERKS OF WORKS.—I should thing the employer has the right to employ any clerk of works he may think fit on his own work, and pay him too. If he does this the architect cannot reasonably object, but in cases where the architect pays the clerk of work he appoints him too.—I. M. A.

◆

COMPENSATION CASE.

THE MERCHANT TAYLORS' COMPANY AND THE METROPOLITAN DISTRICT RAILWAY COMPANY.

A COMPENSATION case was tried at Guildhall, on Saturday last, the 10th inst., by the Common Serjeant and a special jury, which possesses some points of interest. The property for which notice had been given by the Railway Company consisted of Nos. 6, 7, and 7½, Great Trinity-lane, and No. 2, Little Trinity-lane, Cannon-street, containing an area of 3,378 square feet. The houses are old, and their position for years past had been unimportant, the rent realised by the Merchant Taylors' Company having been only £117 a year; but in consequence of the opening of Queen Victoria-street the property obtained a frontage upon the new street, and its value was as a matter of course enormously increased. In consequence, however, of the dilatory action of the Metropolitan Board of Works and the Metropolitan District Railway Company, the Merchant Taylors' Company had been unable to deal with the property, and in the absence of any data as to lettings to guide them considerable difference of opinion prevailed between the parties interested as to prospective value of the ground.

The Railway Company was represented by Mr. Hawkins, Q.C., and Mr. Streeten as junior counsel; the Merchant Taylors' Company by Mr. Horace Lloyd, Q.C., and Mr. Philbrick, instructed by Mr. Fisher. The witnesses for the Merchant Taylors' Company were Mr. Edward I'Anson, the surveyor to the Company; Mr. Horsey, of the firm of Fuller and Horsey, who valued the land as worth 6s. a foot rent, or £6 a foot for the freehold; Mr. G. B. Williams, of Mercers' Hall; and Mr. Farmer, of the firm of Debenham, Tewson, and Farmer, who valued it at 5s. a foot rent, or £5 a foot for the freehold; Mr. Farmer giving it as his opinion that a warehouse erected on the site would let for £1,600 a year. For the Railway Company Mr. Ryder, Mr. E. N. Clifton, Mr. Stephenson (Hunt & Stephenson), Mr. Trist (Norton, Trist, & Watney), and Mr. Murrell were called, who represented the land as only worth from 2s. 6d. to 3s. a foot, their amounts varying from £9,000 to £12,000, while the sums claimed by the Merchant Taylors' Company's witnesses varied from £18,000 to upwards of £24,000. The number of years' purchase at which the ground-rent was capitalised by the different surveyors engaged was from 20 to 22½ years' purchase, it being valued as an unsecured ground-rent. The jury retired to consider their verdict, and, after a very short consultation, awarded the claimants £13,500, which would make the rental value £550 a year, with 10 per cent. added for compulsory sale, or about 3s. 3d. per foot.

WATER SUPPLY AND SANITARY MATTERS.

Cambridge.—We stated in last week's Building News that the Cambridge Improvement Commissioners had resolved by a majority of four to apply to Parliament to divert the sewage of the town from the river Cam. At an adjourned meeting of the commissioners, held on Tuesday last, the opinions expressed were adverse to immediate action, the master of S. John's College urging that there was no necessity for haste, and a proposition to sign the requisite petition to Parliament in favour of the Bill was negatived by 38 to 8. This virtually rescinds the resolutionof the former meeting, and it is generally understood that no further action will be taken at present, a number of Commissioners advocating delay until Government takes the matter in hand.

Roydon.—The parish officers of the village of Roydon, Essex, at the close of last year received notice from the Clerk of the Lea Conservancy to stop the discharge of a public drain, slightly affected by sewage matter, into the river Stort; some of the principal ratepayers were selected to act as the committee of the sewer authority, and for months that committee endeavoured to get rid of the present sewage at the least possible expense to the ratepayers. Those endeavours proving unsuccessful the committee was obliged to resort to the assistance of a professional engineer, and accordingly requested Mr. Jabez Church, of Chelmsford and Great George-street, Westminster, to inspect and survey the parish for the purpose of arriving at some plan of sewerage. That gentleman having sent in a plan and report, it became necessary to call a vestry, which was lately held, and was largely attended by the parishioners. Some of the members of the committee entered into a full explanation of how the matter stood as regarded the parish and the Lea Conservancy, the difficulties and troubles the committee have had to contend with, and showed so satisfactorily to the vestry that the course they had adopted was the only one that could, under all the circumstances, be legally adopted, that a resolution affirming all they had done was passed with only three dissentients.

LEGAL INTELLIGENCE.

The Epping Sewerage.—In the Court of Queen's Bench, last week, Sir John Karslake moved for a rule *nisi* for a *certiorari* to bring up an order of justices with a view to its being quashed. The motion was mainly for raising the question whether, under the numerous sanitary Acts now in force, there was a sewer authority in the parish of Epping. There was also the main point, whether the Home Secretary had authority to direct certain sanitary works to be done in the parish of Epping. It was contended that in consequence of some defects in the Acts there was no sewer authority in the parish to levy a rate for carrying out the works.—Rule granted.

The Rating of Sewers, &c.—In the Court of Queen's Bench, recently, the case of the Metropolitan Board of Works (appellants) *v.* the parish of West Ham (respondents), was heard. It was a poor's rate appeal case, in which the question was raised whether sewers are rateable. The rate was made by the parish of West Ham on that portion of the sewers constructed by the Board which lay within that parish, with the embankment belonging to it, together with some buildings pertaining to the works for raising the sewage. The parish, as to the latter, relied on the recent Greenwich case (reported in the Building News), in which the sewerage works, consisting of houses, sheds, and engines, in that parish were held rateable; and as to the sewers, it was urged that the land would be of value if the sewers were removed. On the other side that case was distinguished on the ground of the present value of the buildings, &c. Mr. Stavely Hill, Q.C., and Mr. J. Raymond were for the appellants (the Board); Mr. Manisty, Q.C., and Mr. G. Tayler were for the respondents (the parish). The court, after a full argument, determined that the sewer and the embankment belonging to it were not rateable, as being of no present possible value. No one would at this moment give anything for the sewers or the embankment, and the Board could make no profit by them. Therefore there was no rateable value, at all events as to the land covered by the sewers and the embankment. It might be that there was some appearance of inconsistency in holding the buildings containing the pumping engines as rateable. But on the whole there appeared to be a distinction between the two cases, and therefore, in accordance with the former case, the buildings would be rateable, though not the sewers. Judgment for the appellants as to the sewers; rate upheld as to the buildings.

Our Office Table.

Death of Mr. Brassey.—This well-known railway contractor died somewhat suddenly on Thursday week, at St. Leonards-on-Sea, where he had recently been staying for the benefit of his health. Mr. Brassey has suffered from periodical attacks of asthma for some years, and within the past few months his health has given some anxiety to his friends. But even so recently as Wednesday last he had projected a journey to Preston Hall, near Maidstone, the seat of his second son (Mr. H. Brassey, M.P. for Sandwich); and his death, which occurred at half-past four o'clock on Thursday, occasioned very painful distress to those members of his family by whom he was surrounded. Mr. Brassey was born in 1805, at Boughton, in Cheshire, and was articled to a local land-agent and surveyor. The first railway contract signed by Mr. Brassey was in 1836, when he took ten miles on the Grand Junction line, between Birmingham and Liverpool, now incorporated with the London and North-Western Railway. The Penkridge Viaduct, on the same line, was his next great work, and at this date Mr. Brassey accompanied the late Mr. Locke, the eminent engineer, into the southern districts of England, where he executed large portions of the main South-Western line and many of its branches. From the south-west district of England Mr. Brassey was naturally led by the same engineer to the Continent, where, in the early days of improved locomotion, he constructed a large portion of the Western of France and the Paris and Rouen Railways, which in turn led to his contracting for important works in Belgium, Holland, Denmark, Norway, Spain, Savoy, Italy, and Austria, with all of which countries his name will ever be intimately associated. A fair idea of the magnitude of Mr. Brassey's operations may be gathered from the fact that in the thirteen years from 1848 to 1861 inclusive, he made, either by himself or in association with others, 2,374 miles of railway, at a contract price of £27,998,224.

National Technical College. — Another meeting was held on Tuesday afternoon, at the Mansion House, of the general committee formed some time ago, with a view to the establishing of a national university for industrial and technical training. The Lord Mayor, president; Mr. E. T. Gourlay, M.P., treasurer; and Mr. C. Reed, M.P., were present. The desirableness of holding a conference of leading educationalists, presidents of chambers of commerce and agriculture, and others, during the month of February, to consider the various branches of the subject, was affirmed, the conference to be followed by a public meeting at the Mansion House. The Lord Mayor promised to use his influence to obtain the holding of the conference in the Guildhall. A committee was to take the necessary steps towards the holding of the conference.

The East London Museum.—The works in connection with this building are now rapidly progressing towards completion, and it is believed that the museum will be ready for opening next spring or summer. It is announced that it will contain the whole of the animal product and food collections at present in the South Kensington Museum, and these collections will be the national collections in the departments of science which they represent, in the same manner as the museum in Jermyn-street is the national geological collection. There will also be a "circulating" gallery of pictures. Application has been made to the South Kensington Department of the Privy Council, by the local promoters of the East London Museum, for a space to be set apart in the building for an Art and Science School, with all the best educational appliances, and for a library in connection with the school, so that there will be in this quarter of London a good central school for technical education in the immediate neighbourhood of the dwellings of thousands of artisans and handicraftsmen.

Street Tramways.—The first section of the Pimlico, Peckham, and Greenwich Street Tramway—namely, from Blackheath-hill to New Cross—was opened for traffic on Tuesday morning. The Act was only passed in August last, and a second section of the line—namely, from East Greenwich to Deptford, where it will join the section just opened—will be ready for traffic by the end of this month. These lines will be immediately extended towards the City and West-end, in accordance with the company's Act, whereby they are already authorized to come to the south side of Blackfriars and Westminster Bridges, and to cross the Thames to the north side to Victoria Station, Pimlico. Extensions are now being applied for to cross the Thames also at London, Blackfriars, Waterloo, and Westminster Bridges, thereby bringing their lines into direct communication with the City, Strand, and Westminster.

MEETINGS FOR THE ENSUING WEEK.

Monday.—*Royal Institute of British Architects.*—"On the Mystery of the Tomb of Charlemagne, and the Researches made of late years to Discover its Actual Site in the Cathedral of Aix-la-Chapelle." By Professor Donaldson. 8 p.m.

Society of Arts.—(Cantor Lectures.) "On Artists' Colours and Pigments." Lecture V. By F. S. Barff, Esq., M.A. 8 p.m.

Tuesday.—*Institution of Civi Engineers.* — Annual General Meeting. 8 p.m.

Wednesday.—*Society of Arts.*—"On a Method of Lighting Towns, Factories, or Private Houses by means of Vegetable or Mineral Oils." By Albert Silber, Esq. 8 p.m.

Chips.

It is proposed to erect a town-hall for Coggeshall.

Great alterations have been made in the police quarters at Billericay, Mr. Cross, of Hutton, being the builder employed.

A new iron church for the congregation of the Rev. Dr. Carden, situate at the corner of South Island-place, Clapham-road, was opened on Wednesday week. The church is lined throughout with stained and varnished pine wood. The length of the building is 98ft., and its breadth about 42ft. The pews are open, and will seat about 500 persons. The cost has been about £700.

Mr. William Bourne, architect, died suddenly on Wednesday night at his residence near Dawley Bank, Wallheath, Dudley. The deceased gentleman was about sixty years of age. At the time of his death the deceased was superintending the alteration of the Dudley Almshouses to the purposes of the Dudley General Hospital.

It is reported that the Suez Canal Company is to be formed into an English joint-stock enterprise, with the Duke of Sutherland as chairman. An announcement of this kind is likely at the present moment to attract some attention at S. Petersburg.

All Saints' Church, Woodlesford, was consecrated on Wednesday last. Messrs. Perstin & Son, of Leeds, were the architects.

The rebuilding of S. Michael's Church, Barton-le-Street, is intended to be completed by Easter, Messrs. Perstin & Son, of Leeds, being the architects.

The vicarage at Hunslet Moor was finished about two months ago; the vicarage at Rothwell is approaching completion, and plans have been made for Whitwood Mere Rectory, by Messrs. Perstin & Sons, architects, Leeds.

The Maison-de-Dieu Hospital, at Ripon, has been rebuilt, and the old chapel adjoining preserved. Messrs. Perstin & Son, of Leeds, were the architects.

Plans have been prepared for new schools at Sheriff Hutton, Hunslet Moor, Gledhow, Chapel-Allerton, Lofthouse, and for the enlargement of schools at Pickerhill, Arthington, and East Morton, by Messrs. Perstin & Son, of Leeds, architects.

The extensive enlargement of the Prospect Hotel, Harrogate, was partly completed for the reception of visitors before the season, and now the season is over the remaining portion and completion of the tower are in hand, the architects being Messrs. Perstin & Son, of Leeds.

A new hall at Colne has been erected on the old site of Colne Hall, for Mr. Robert Shaw, and extensive additions have been made to Oulton Hall, Messrs. Perstin and Son, of Leeds, being the architects.

The restoration of the church at Aldborough is almost completed as regards the nave and aisles, and a contract has been entered into for the further restoration of the chancel and south porch, Messrs. Perstin & Son, of Leeds, being the architects.

Timber Trade Review.

The following prices are quoted in Messrs. Churchill & Sim's circular of this month:—Baltic fir timber, per load of 50 cubic feet.—Riga, 63*s* to 67*s*; Dantzig and Memel crown, 80*s* to 90*s*; do. best middling, 70*s* to 80*s*; do. good middling and second, 62*s* to 67*s*; do. common middling, 52*s* to 57*s*; do. small, short, and irregular, 45*s* to 55*s*; Stettin, 53*s* to 60*s*; Swedish, 53*s* to 55*s*; do. small, 47*s* to 50*s*; Swedish and Norway balks, 32*s* to 38*s*.

Deals and battens, per Petg. std. hund.—Archangel, 11*l* 10*s* to 12*l* 10*s*; do. 2nd, 9*l* to 9*l* 10*s*; Petersburg, 12*l* to 13*l*; Wyburg, 9*l* 15*s* to 10*l* 5*s*; Finland and handsawn Swedish, 7*l* to 8*l*; Petersburg and Riga white, 8*l* 10*s* to 9*l* 5*s*; Christiana deals, best sorts, yellow and white, 10*l* to 12*l* 10*s*; Norway deals, other sorts, 7*l* to 8*l*; do. battens, all sorts, 5*l* 5*s* to 7*l*; Swedish and Gothenburg good sorts, 10*l* to 10*l* 10*s*; common and thirds, 8*l* 10*s* to 9*l* 10*s*; Gefle and best Swedish deals, 10*l* 10*s* to 12*l* 10*s*; Swedish battens, 8*l* 10*s* to 10*l* 10*s*; Dantzig crown deck, per 40ft. 3in., 17s to 21*s*; do. brack, 11*s* to 16*s*.

American timber, per load.—Red pine (mixed and building), 50*s* to 65*s*; yellow pine, building sizes, 60*s* to 70*s*; pitch pine, 60*s* to 75*s*.

American deals, per Petg. std. hund.—Quebec pine, 1st quality floated, 16*l* to 17*l*; 2nd do., 12*l* to 12*l* 10*s*; 3rd, 8*l* to 9*l*; do. 1st quality bright, 18*l* to 19*l* 10*l*; 2nd do., 12*l* 15*s* to 13*l* 10*s*; 3rd, 8*l* 10*s* to 9*l*; New Brunswick mixed pine, 7*l* to 8*l*; Canadian spruce, per Petg. std. hund., 1st, 8*l* 15*s* to 11*l*; 2nd, 8*l* 5s to 8*l* 15*s*; 3rd, 7*l* 15*s* to 8*l*; New Brunswick 1st, 8*l* 5*s* to 8*l* 15s.; 2nd, 8*s* to 8*l* 5*s*; 3rd, 7*l* 5*s* to 7*l* 10*s*; unsorted, 7*l* 15*s* to 8*l* 10*s*; pitch pine planks, 12*l* t o12*l* 10*s*.

THE BUILDING NEWS.

LONDON, FRIDAY, DECEMBER 23, 1870.

THE DOMESTIC ARCHITECT.—II.

THE general position of the dwelling and its outbuildings having by this time been determined, the distribution of the plan may be worked out at home. Many of our English houses are so thoroughly good and comfortable as to serve as models, especially those in the neighbourhood of London and of our large provincial towns. In these the happy medium between the town house and the country mansion has been attained, so much so that a student could find nowhere else in the world, excepting in America, plans so well worthy of attention. The reason is that home life in England is more sedulously cared for than in almost any other country, and but few Englishmen are ignorant of or inexperienced in the provision of the house arrangements to secure it. And this is where the builder, however good a workman he may be, is at disadvantage with a man who has had professional training in an office, and can fall back upon his early home teachings of the life of a refined home. But to return to the subject of convenient arrangement. A very safe mode of planning a house is to first settle, upon an easily-determined scale, the relative dimensions of the principal rooms in proportion to the intended outlay. Supposing, for the sake of a moderate example, that the cost of a small country dwelling is to be £2,000, and that the building is to be of two stories, with additional rooms in the attic for the use of servants, and that its kitchens and domestic offices are to be upon the ground floor, with a cellar under a portion of the latter, and an excavation of sufficient depth for stability and dryness under the remainder of the building. Calculating the cost of buildings in the neighbourhood of about the dimensions of the one under consideration, a certain sum per foot cube, or per square upon the ground floor, will be made the basis of the estimate, and this will fix the approximate number of cubit feet or squares that the house should contain. This being arrived at, a scale of internal accommodation may now be determined and the wished for number of necessary rooms may be settled upon and their sizes fixed. Then make diagrams of these several rooms and cut them out of paper, and having done so, try and dispose each one with the other in such a manner as best to suit their relative position, and the convenience of hall, staircase, and passage. This is not a usual way, but on trial will be found more satisfactory than to make a block of the area intended, and then to proceed to cut it up into the several portions of a dwelling, and as these little diagrams can be transposed and pushed about in every conceivable manner, the first sketch plan can be well studied, and its leading features laid out with less mechanical drawing and much saving of time and india-rubber. Many an evening may be pleasantly spent with such little diagrams, admitting such infinite variety of combinations. It is useless to fix what the dimensions of rooms even upon this definite scale of cost should be, or to say for instance that a dining room, should never be less than 16ft. in width, when we know of circumstances that may imperatively compel it to be made perhaps but fourteen, or to insist that the aspect of the family sitting room should be south-east, when the nature of the site and its surroundings compels us to place it facing the north; all that an architect can do is to do the very best he can under the circumstances, and, accepting all the necessities of the case, to so skilfully work them out as to mitigate an evil and bring to fullest perfection an advantage. A few criticisms upon our existing models may be made, and a few general principles insisted on. In the first place, we rarely make, in our country houses, sufficient of our entrance porch or portico. When used it is often so arranged as to be only an ornamental adjunct to the hall door, and frequently scarcely serves even as a sufficient protection to the weather. Its projection is insufficient to be of use, unless when extended over the carriage-drive, when it assumes another purpose, and all idea of occupation by the inmates of the house is never once suggested. In our varied climate, in which frequently we are subjected to a burning sun as well as to a piercing wind, out-door additions to a house are but of capricious use, and yet in old examples of English residences the porch was almost invariably a portion of the plan, and with its dry and raised floor, its glazed side openings and permanent seats, evidently was meant to be sat in and used. The same may be said of verandas, which are never spacious enough to be serviceable, nor arranged so as to be comfortable. They are generally too flat, often so low as to darken the windows in the short days of our long winters, and rarely floored so as to be pleasantly made use of. It has always seemed as if in this climate of ours they might be so treated as to be very useful and acceptable. They should have narrow plank floors, which would be both dry and warm, and they should extend from the house at least ten feet; the roof should be carried as high as the sills of the chamber windows, and the opening should be above the level of the tops of the sitting-rooms below. The pillars or other supports should be slender, so as not to obstruct the light, and placed together in pairs, at intervals sufficiently frequent, as whilst not cutting off any desirable view from a window, to permit the space between each pair to have a frame containing a canvast screen or blind placed during very hot weather. The intention of these screens, which when put up should entirely enclose the space in front, is to afford a ready means of cooling the air within the veranda, and consequently the atmosphere of the rooms opening thereon, by having their outside surfaces constantly wetted during very hot weather, as in India; a simple means of adding to the comfort of the inmates, which might easily be attained here. The screens should not come quite up to the top of the openings, spaces being left for light, and the ends may be left unfilled according to the aspect and the position of the sun at the time. In American country houses is often seen an addition to the spacious colonnades or verandas with which they are nearly all provided, which serves the purpose of an additional room. This has been christened the "ombra" or shade room, and is a sort of open pavilion capable of being closed at the sides by blinds, covered with a projecting roof, and leading from the veranda in the most desirable situation for cool breezes that the site may afford. Something of this kind might be conveniently planned as a welcome addition to our own country houses, nor does the conservatory at all make amends for it, as, excepting early spring or autumn, the temperature is not such as to invite long staying under its glass roof and in its artificially-heated atmosphere. A large conservatory with plenty of leafy shrubs, a dry floor, good ventilation, and as little unshaded glass as possible, may be made a very comfortable place to read in or to lounge, but it rarely is so, because gardeners will so seldom learn to consider it other than a greenhouse. A large, well planned winter garden may be made the perfection of comfort, and happy is the man who has the space and the purpose to provide such. But in the absence of this our American friend's ombra is worthy of transplanting. In summer time it may be left open, or partially screened on the sunny exposure by removable blinds, and in colder weather glass sashes may be substituted, and it may then serve the double use of a conservatory or plant house. Another point in which very many country and suburban houses are open to criticism is either the distance of the domestic offices from the principal entrance door, or else the nearness of the kitchen to the main part of the house and the frequent annoyance from culinary odours in consequence. This double objection may generally be guarded against by so disposing the principal staircase that immediately behind it may be a lobby containing the servants' or secondary stairway, and beyond this the kitchen.

Next to the convenient and well thought-out arrangement of a plan, the materials and construction of a private house, whether in town, suburb, or country, are matters of considerable importance. Without entering upon the merits of any novel material or method of building, suffice it to say that with an honest and experienced builder there need be no difficulty in constructing a substantial, dry and healthy residence, durable in itself, and not requiring frequent and costly repairs. One caution certainly is necessary, and that is against the too free use of cement and stucco. Cement is employed often as a covering for imperfect work, whether of brick or of stone, that is not weatherproof, and the more smoothly it is finished the greater the danger of costly reparation. Nor is cement as an external facing necessarily conducive to a dry state of wall; on the contrary there is a danger that bricks of a softer and more porous character may have been employed, and the water absorbed by them in laying, is confined within the wall by the cement, and can only dry out internally. Hollow walls, that is walls of a substantial external thickness, with an inner lining of half a brick in thickness and a space between of 2in., are much more commonly in use in American structures than in England, and it would be well if our builders adopted more generally the plan, which for covering with cement has many recommendations. When these are used air bricks freely opening to the inner space should be used at frequent intervals. There are many other important points affecting the dryness and permanent repair of a well-built house to which space will not permit allusion, one remark may be made, however, upon the somewhat unsettled question of guillotine sashes as applied to window openings. No mode of glazing is on the whole so convenient or so well serves purposes of healthful ventilation, but however well made, there is often a serious inconvenience complained of in cold weather, from the draughts of cold air from the junction of the upper and lower sash, and of the difficulty of controlling ventilation without too severe a direct or downward current. A strip of india-rubber tubing upon the inner side of the upper sash will effectually exclude the cold air from penetrating between the sashes, whilst a very simple, convenient, and efficient mode of admitting fresh air near the ceilings of a heated room may be suggested as follows: Let the top rail of the upper sash be made 2in. deeper than usual, and the underside or soffit of the top of window opening be made double, with a perforated face internally towards the room, and open at the external end. When the sash is fully up, this opening will be closed, but if dropped 1in. to 2in. it will admit the passage of fresh air into the room through the perforated openings, which may be so protected by wire gauze as to allow only minutely subdivided streams to pass across the upper part of the room. This has been frequently applied to houses that have been erected in different situations and the result has been satisfactory, the supply of air being entirely under control.

An advantage of windows so constructed is that when fires are used, a supply of fresh air for combustion is drawn from above, by which the draughts that otherwise must find their way across the floor from under doors, through cracks and the like, are less likely to be felt. It is useless to insist upon flues and air ducts for purposes of ventilation forming (as they undoubtedly should do) an integral portion of the plan of even the smallest private residence; builders will not construct them, nor will dwellers care to take the little trouble necessary for their adjustment and proper working; the ordinary open fireplace and the dropped upper sash of a window constructed as is here recommended are all that house-owners usually would care to attempt. It may be added that in a bed-room, especially a sick-room, a useful plan is to have a board ready, the width of the opening and six inches wide, and this being inserted under the lower sash previously raised high enough to close down upon it, will allow a stream of air to pass into the room between the two sashes, the current being so broken that no direct draught would usually be felt.

The subject, however, grows too freely to permit more remarks. Sufficient has been said to show how many points there are upon which the domestic architect must be prepared to give useful and well-considered counsel, and they all form essentials of the first well-matured plan, every minutiæ of which cannot be too thoughtfully studied. Every intending client can understand the superior convenience of a well-digested plan, while he may be comparatively unable to appreciate the excellencies of an exterior every detail of which shall be architecturally correct; and the more the public are forced to see that there has been a skill employed to contrive superior accommodation for house comforts within certain limited areas, the more readily will they employ members of a profession which places such practical results before their eyes. So much importance should be claimed for the "plan," that it is not unfair to believe that the employment of professional advisers by private clients for dwellings of moderate amount (how numerous that class must be needs no demonstration) will depend almost entirely upon the confidence the public may be brought to feel in the certainty that the arrangement of the dwelling intended to be built will be more sedulously cared for by an architect whose education has been directed to that end than by the builder. It is not security against breach of contract, or use of improper materials, or unworkmanlike construction, that a client really seeks nowadays when employing an architect to act between him and a respectable master-builder, so much as a certainty that the very best thought will be given to the contrivance of the structure, and that his wants and wishes will be met in the best and most skilful way.

◆

CEILINGS.

THERE were some points in the valuable letter of Mr. Knightley on this subject, which appeared a short time since in the pages of this journal, upon which I wish to comment. Agreeing with him of necessity in his recommendation to be particularly careful as to the strength and length of the hair to be used in the plaster for ceilings, and as to the substance of the laths, which should in all cases be double, and also that the plaster should be laid on with the minimum of thickness,—a point much neglected,—I must take objection to what he said about the use of Thames sand, and to the omission of any remarks upon the character of the lime, which he assumed to be made from chalk in all cases. Now chalk lime is ordinarily used for plaster, not, I think, because it is fit for the purpose, but because it is cheap, and the assumption referred to has become a common one, because it is about the only purpose for which it is permissible to use chalk-lime at all.

At best, however, chalk-lime can only make a poor weak porous plaster that should be eschewed because it is unwholesomely absorbent, a mere trap for fever contagion and other diseases. While the best lias-lime can be obtained from Cardiff, and elsewhere, in London at the rate of seventeen shillings the ton, no worse material really need be used on the score of cheapness. If such lime, previously ground, be run and left a sufficient time before it is used, a really serviceable hard plaster may be obtained without fear of blisters. A mixture of Portland cement will still further add to its quality and strength. In fact, for ceilings, as for any other purpose, the mortar cannot be made of too good a material. I pass by other methods that have been advanced with much plausibility for more quickly indurating plaster, such as that brought before the Institute of Architects by Mr. Westmacott, and another now in use at the South Kensington Museum building, although both are well worth examination, and experience will prove their real value.

With regard to the quality of the sand, I would maintain the same general principle, that it cannot be too good. Mr. Knightley says that Thames sand is apt to make the plaster too "short," and advises the choice of pit or road sand instead. This can be only when there has been too much sand employed, and that with weak chalk-lime. It is impossible that the admixture of loamy earth in any proportion can benefit any description of mortar or plaster, and therefore clean river grit must be preferable to either pit or road sand, for loam in any shape is detrimental in proportion to its amount.

One word with regard to a possible substitute for hair, as hair is becoming every day more difficult to obtain. In the pulling down of portions of old work for the reparation of the Lollards' Tower at Lambeth lately, some plaster of remarkable hardness was found; it was far superior to any of the rest, and upon examination was discovered to have been mixed with chopped rye-straw (recognised by several of the heads which had been mixed up) instead of hair. This plaster was wonderfully sound and firm. Possibly other descriptions of straw might be found equally suitable for the purpose, and at any rate it would be quite worth making some experiments on this subject. In places where it is difficult or expensive to obtain any other but chalk lime, it is worth noting that lime made from the upper bed of chalk is better than the lower and finer beds. Tolerably hard mortar composed of the former is to be met with, as in the Isle of Thanet. The reason of this is that the upper beds have a good deal of argillaceous matter mixed with the chalk; the result, therefore, approaches more nearly to the nature of hydraulic limes and cements. A proper proportion of the right description of clay mixed with the pure chalk-lime before it is burnt would produce the same effect. Having obtained a really good plaster to work with, it is much to be wished that it might be applied in a somewhat more solid and durable manner than is usual in this country, and that instead of flimsy laths nailed under the joists or on each side of partitions to receive it, short pieces of wood were fixed in between the joists or quarters, and the plaster trowelled on from front and back, so as completely to envelope these pieces of wood. By this means the plastering on partitions and ceilings would not be merely suspended coats, but integral portions of the structure, which, when dry, would become almost imperishable and incombustible. Thus, instead of being flimsy ill-connected things, inviting fire to destroy them, and the means of conducting that destroying element to all the other portions of the building, they would be, as it were, thin vertical or horizontal shields to prevent fire from spreading and touching the timbers. This use of plaster, which I advocate, is to a certain extent common upon the Continent, and well deserves the attention of architects and builders in this country.

John P. Seddon.

◆

An exhibition has been opened at 9, Conduit-street, of photographs taken by Colonel Stewart Wortley, which are to be sold in aid of the distressed French peasantry.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

AT the ordinary general meeting on Monday evening last, Mr. Edward I'Anson, Vice-President, occupied the chair. Professor Donaldson announced a number of donations to the library, and Mr. Ebenezer Gregg was unanimously elected a Fellow. The death was announced of Mr. Arthur Osmond (Fellow), of Plymouth, and Professor Donaldson read a letter from Sir James Pennethorne, in reply to the vote passed at the last meeting congratulating him upon receiving the honour of knighthood.

ARCHITECTS' DRAWINGS.

Professor Donaldson also read a letter from Mr. Francis Ouvry, the honorary solicitor to the Institute, in reply to a request made by the Council that he should give his opinion as to the legal aspect of the question of the ownership of architects' drawings. Mr. Ouvry stated his "clear opinion" to be "that the plans, specifications, and drawings, whether the buildings be erected or not, are the property of the client if he has paid for them, and that the decision in the case of Ebdy *v.* McGowan practically settles the question." "I cannot, therefore" (wrote Mr. Ouvry in conclusion) "advise the Council to incur expense in prolonging a contest the success of which is, I think, hopeless." Professor Donaldson also announced that it was the intention of the Council to print this letter with the agenda and notice-paper of the next meeting, and send it out to the members.

A long and desultory conversation ensued, in the course of which Mr. Charles Barry took exception to the premises on which Mr. Ouvry had based his opinion. As far as he (Mr. Barry) understood the question, the case of Ebdy *v.* McGowan did not at all settle the question. (Hear, hear.) The real question was whether a client when he engaged an architect paid for drawings, or for something else in the creation of which the drawings were instrumental only? In every opinion relating to the subject yet given, the judges had started with the fallacy of assuming that the client had paid for the *drawings* instead of for *professional services.*

Mr. Wyatt Papworth suggested whether it would not be well to ask Mr. Ouvry to reconsider the wording of his letter.

Professor Donaldson thought there could be no question that Mr. Ouvry understood the case perfectly well. The custom of the profession had been declared by the judges to be unreasonable, after having been most fully argued, and there was an end of the matter.

Mr. Jennings did not think that the real point at issue was raised in Mr. Ouvry's reply.

Mr. Charles Barry then said he wished to move a resolution somewhat to this effect:—"That as it appears to this meeting that some of the points raised in Mr. Ouvry's letter do not wholly meet the question, it is considered desirable that the letter should be reconsidered by him and the Council before being printed and circulated."

Mr. Wyatt Papworth said he would second such a motion.

Mr. Roberts said that the majority of the profession perfectly agreed with the decision in Ebdy's case. They also agreed, however, that that was not a proper case to try, but that where a commission was paid for the designs they should properly be handed over to the client. But Baron Bramwell, in giving his opinion on that case, went beyond its attendant circumstances, and stated his general opinion that *in every case* drawings should belong to the employer. Mr. Ouvry had argued from Baron Bramwell's extra-judicial remarks that the drawings belonged in every case to the client.

Prof. Donaldson said that the universality of the custom of architects retaining the drawings of buildings completed by them could not be proved. In the face of the fact that this was not the practice of many eminent architects, such as Mr. Street, Mr. Waterhouse, Mr. Sidney Smirke, and others, the universality and unity of the custom could not be proved.

Mr. Charles Barry remarked that the interests of the law officers of the Crown were entirely against the profession on a question of this kind, and the profession fought at a great disadvantage. He was anxious, therefore, that the Institute should not circulate, without due consideration, a letter which condemned the practice of the profession.

Prof. DONALDSON said the Council's reason that the letter should be published was that the Institute should not hoodwink the profession by leading its members to think that they had a right to retain the drawings when it had a legal opinion to the contrary before it. He believed they would lead a great number of their professional brethren into innumerable difficulties if they were to maintain silence on the question any longer. He considered that the discussion of the question had already done the profession more harm than enough.

After some further discussion, Mr. Barry's motion (verbally differing from but in substance the same as before-mentioned) was put to the meeting and carried.

Prof. DONALDSON then read a paper "On the Mystery of the Tomb of Charlemagne, and the Researches made of late years to Discover its Actual Site in the Cathedral of Aix-la-Chapelle," of which we hope to give an abstract in our next number.

◆

ARCHITECTURAL ASSOCIATION.

AT the usual fortnightly meeting on Friday evening last, Mr. T. H. Watson, A.R.I.B.A., President, in the chair, Messrs. R. W. Crawley, E. C. Robins, C. J. Jones, G. D. Reddell, W. McLachlan, — Milwood, and C. White, were elected members.

Mr. JOHN S. QUILTER, Secretary, called attention to the drawings which had carried off the Royal Academy Architectural Travelling Studentship for 1871,* Mr. H. Walter Lonsdale, the successful competitor, being a member of the Association.

Mr. PHENE SPIERS having detailed the rules and regulations of the new Architectural School at the Royal Academy (which will be found in another column),

Mr. S. SALTER, A.R.I.B.A., read a paper

ON THE ARRANGEMENT AND VENTILATION OF HOSPITALS.

The author commenced by observing that the subject was more of a practical than of an artistic nature, inasmuch as the arrangement of plan, the forms and sizes of the wards, the arrangement of windows, the disposition of the beds, the cubical and superficial areas of the various parts, the ventilation, and such like subjects, were the most necessary points to be considered by the designer of a hospital. After a brief historical notice of some of the oldest and best known hospitals, and a description of the ancient modes of arrangement of such buildings (which modes of arrangement bore little or no analogy to those which are the result of our better acquaintance with physical laws), Mr. Salter proceeded to notice some of the modern modes of arrangement. During the last century the L, H, and E forms seem to have been very popular, although others were used. Such forms of plan possessed many advantages, as the male and female wards were at the sides, and kept quite distinct, the "administration" being in the middle, and thorough ventilation was obtained by windows on either sides of the wards in the arms of the H and E. There were, however, many objections to such forms; among the principal ones were: the connection of the wards with the "administrative" block, whereby miasma or contagion were communicated throughout the whole building; the stagnation of the air within the spaces formed between the projecting arms of the H and E; and many others. The French started the grand idea of the pavilion hospital, first carrying it out in the Lariboissière.† The great principles carried out in this building are (1) the entire separation of the wards for the sick (except by low corridors) from the administrative buildings; (2) the free passage of air all round every ward; and (3) obtaining sunshine on both sides of each ward, and the proper ventilation of of the wards and their adjuncts. The hospital at Bordeaux, and the S. Jean, at Brussels, are built on a similar plan. The Vincennes hospital shows the pavilion principle applied in a different way. In the front is the "administration," at the sides the wards and sisters' rooms, &c., connected only with the "administration" buildings by a glazed corridor, a space for the circulation of air being left between the ward and administrative buildings. The first great hospital built on the pavilion principle in England was the Herbert Hospital, Woolwich. This building embodied all the benefits of the Lariboissière, with some great improvements. The administrative building is placed in the centre, and in front of the line of the other buildings, and connected with the hospital proper only by covered corridors. The new Military Hospital at Valetta has wards on one side only, and an open corridor on each floor. The Hospital for Incurables at Malta, has open corridors all round a quadrangle, with wards on either side, and administrative and other buildings at the back and front, and detached dining-rooms, day-rooms, and chapel, and the wards for special cases entirely separated from the other parts of the building. The new Infirmary at Leeds* has wards ranged at the back and front of a mass of central buildings, some one story high, some more. The new Blackburn Infirmary has an ingenious arrangement for obtaining space between the wards by placing them not in a line with one another. Many other buildings more or less differing, but all being variations on the original pavilion principle, might be named. Through the courtesy and kindness of Mr. Wyatt, Mr. Marrable, and Mr. Currey, Mr. Salter was enabled to show the plans of the Stockwell Small-Pox, the Stockwell Fever, and the new S. Thomas's Hospitals.† In all these buildings the great principle of keeping the wards for the sick distinct from the administrative building, is retained.

From all the data to be collected from an examination of the buildings referred to, it may be considered that the following are essential points:—Firstly, that wards for the patients should be distinct buildings of themselves. Secondly, that all administrative buildings should be distinct from ward buildings. Thirdly, that no more connections should exist between the two than is absolutely necessary for communication, and *that* as open as possible. Fourthly, that the greatest amount of air that can possibly be obtained should circulate around each ward building. Fifthly, that the wards should be placed north and south, so that sun gets to each of the long sides of the wards; this ensures dryness and cheerfulness. The author next proceeded to consider in detail the best methods of dealing with the various requirements of a hospital. He laid it down as essential to the healthy condition of any ward or hospital that there should be ample facility for the proper circulation of air in the immediate vicinity of the sick bed, so that the superficial area appropriated to each bed should perhaps be as much the subject of consideration as cubical area. A hospital bed is generally 3ft. 3in. wide, and 6ft. 6in. long, or thereabouts, and as the bed is generally placed 6in. from the wall, it may be said that the necessary space for a bed is 7ft. × 3ft. 3in., = 24ft. 9in. superficial. Around this is required space for ventilation and administration, for the use of a portable bath, night-chair, &c., without discomfort to the adjoining patients. For these purposes a space of at least 2ft. should be left on either side of the bed, making the total width of space allowed for each bed 7ft. 3in. As regards the distance from the wall to the centre of the ward, this should be so arranged that there is ample space for the patients, nurses, and medical officers to move about without disturbing the patients, and for carrying beds, &c. in case of need. For this purpose a space of from 10ft. to 12ft. between the two rows of beds is found best to answer, as it leaves ample space for tables, passage way, &c., the tables being about 3ft. wide, and the space between them and the feet of the beds on either side being about 4ft. 6in. Thus, allowing 7ft. on each side for the beds, the total width of the wards should be about 26ft., or per bed a space of 7ft. 3in. × 13ft., = 94ft. 3in. superficial or floor space for each bed. Miss Nightingale thinks 100ft. not too much. As to cubical area, from all trials which have been made, it seems to be considered that 15ft. or 16ft. is the best height for a ward, as this gives ample space above the patients, and the top ventilation is sufficiently removed from them to prevent their being affected by the currents of air. Thus 94ft. 3in. superficial space, multiplied by 15ft., the height, gives 1,413ft. 9in. cubical area; or by 16ft. height, 1,508 cubical feet. This is generally considered sufficient in practice, but there are exceptional cases in which 2,000ft. per bed is provided. Twenty is the lowest number of beds a general ward should contain, and thirty-two the greatest number. From 28 to 30 will generally be found to be a good number. The nurse's room should be near the entrance of and have a glazed window looking into the ward but no door into the ward; the room should be, entered from the passage. The air of the nurse's room is thus kept free from the air of the ward. For the same reason the scullery should not be entered from the ward. The bath-room, lavatories, water-closets, sinks, &c., should be kept as distinct from the ward as possible, but connected with it. It is universally agreed that the furthest point of the ward (most remote from the main building) is the best place for them. If placed in the angles of the building, they are best disposed diagonally on plan. The special wards have been differently placed in different buildings. In the Lariboissière the small or special ward is placed at the extreme end of the ward, near the water-closets and lavatories, which is objectionable not only in a sanitary point of view, but on account of being so far removed from the nurse's room. In the Herbert Hospital the special wards are placed in a separate building at the end of the corridor on the ground-floor; in the Malta Hospital they are also located in a special detached building; and in the Small-pox Hospital at Stockwell in small one-story buildings adjacent to the corridor. As regards day-rooms for the convalescent patients, in the Lariboissière Hospital and the Leeds Infirmary they are on the ground-floor adjacent to the corridors and staircases, communicating with the gardens. In the Herbert Hospital (which is a military hospital, for males only) one large day-room is placed in the centre. In the Small-pox Hospital and the Malta Hospital for Incurables, and others, the day-rooms are at the ends of the corridors; but in whatever position they may be desirable, it is allowed that the ground-floor is the best place for them, on account of its contiguity to the garden. The proportion of convalescents to the number of patients varies with the nature of the disease, but one-third is a fair average to take, and if a superficial floor area of 30ft., and a cubical area of from 450ft. to 500ft. per patient is taken, it is found to be ample. Some of the first hospital authorities contend that day-rooms are not beneficial, and these strongly uphold the system of convalescent hospitals, on which Mr. Salter said he had no time to enlarge. Another means of exercise for the patients is afforded by the corridors, and these should be at least 8ft. wide. The staircases should always have an easy rise; in the Herbert Hospital the rise per step is only 4¾in., with a tread of 12in.; but an average of 6in. rise and 12in. tread is considered by many to be all that is required. With regard to the administrative portions of hospitals, not much of a very definite nature can be laid down, as the arrangements necessarily vary with the class of the hospital, the requirements of the management, and various other circumstances. But there are four points which are generally considered all-important: Firstly, that the front building should be kept purely for the residences and offices of the establishment. Secondly, that the kitchen and everything connected with this department should be in another separate building, placed as near as possible centrally between the male and female sides of the hospital. Thirdly, that the operating theatre, &c., should be also in a central place. Fourthly, that outlying at the back should be laundries, washhouses, *post-mortem* and dead-houses, and such like buildings. The best form of water-closets for patients is a self-acting one, acting by the weight of the patient on the seat. Slop sinks should be of lead, and made to be flushed well with water. The baths should be full sized, and of enamelled copper. Enamelled iron plugged basins set in a slate bench are the best for lavatories. The best urinals are the white stoneware lipped ones. From the passage or landing outside each ward should be a dust-shoot with a sliding door, leading to a dust-house in the basement, which latter should be accessible from the outside and emptied frequently. Patient and dish lifts on the hydraulic principle are necessary for the complete working of each pavilion.

Mr. Salter next made some remarks on the ventilation of hospitals. He remarked that the best authorities agreed that the best ventilated hospitals are those that are ventilated naturally and without artificial aid. He referred to the experience gained in military campaigns that, where the temperature was not too low, the more the patients were exposed to the fresh air the more speedily they recovered, draughts notwithstanding. The doors, windows, and fireplaces should be the chief means of ventilation in all well constructed hospital wards, and other means, such as inlets for fresh air and outlets for vitiated air, are only secondary to these. The best window for hospitals that had been invented is the one called the Middlesex Hospital window, first introduced by Mr. T. H. Wyatt, at that hospital. It consists of the sash divided into a number of horizontal parts, each of which is hinged at its bottom rail and is made to fall inwards as much as is necessary by a perpendicular rod and handle. This ensures an upward current to all air entering the wards. This window is now much used. The doors should not be less than 4ft. wide, and are better if 4ft. 6in. They are also better if single than folding, being more easily opened in a hurry. Above them should be movable louvre ventilators under the control of the nurse. Pedestal stoves with descending flues, such as are used in the Herbert Hospital, are recommended by many. But these are not always successful, and, in some cases, ascending smoke flues have been used, and with success, as in the Adenbrooke Hospital, at Cambridge, where terracotta columns were used as smoke flues. Sheringham's ventilators were also useful, and in addition to these, exit flues for foul air, and inlets for fresh air opening on hot water pipes, are found very useful. The foul air exits are placed as near the ceiling as possible, and conveyed into flues constructed on purpose. In addition to these, other foul air exits should be made in the ceilings, communicating with turrets on the roof, or some high point of the building. Mr. Salter then proceed to explain by means of diagrams the way in which this is carried out in the new hospitals at Stockwell, and in conclusion, remarked that the drainage should be the best of its kind, well trapped, and the ventilating pipes should be carried from the sewers to the tops of the chimney stacks. The floors should be of the closest-grained and best seasoned hard woods, tiles, or cement. Oak is considered the best for our climate, as it absorbs very little water, and this can be diminished by the saturation of the wood in beeswax and turpentine, and cleaning it by frottage, as the French do the parquet floors. The walls and ceilings should be of a very close plaster or cement, Parian or Keene's being the best, as they are capable of taking a high polish, and will absorb the least possible miasma. The stair-cases, landings and corridors should be well ventilated by windows, openings in the ceilings, and Sheringham's ventilators.

---

* See BUILDING NEWS for last week, p. 443.

† For plan of wards and description, see BUILDING NEWS, Vol. XVI., p. 12.

* Described in BUILDING NEWS, Vol. XV., p. 355, and Illustrated in Vol. XIV., p. 461.

† Described in BUILDING NEWS, Vol. XV., p. 327.

A long discussion followed the reading of the paper, the report of which stands over until next week.

◆

NORTHERN ARCHITECTURAL ASSOCIATION.

A QUARTERLY meeting of the members of this Association was held on Saturday, the 17th inst., in the Old Castle, Newcastle-on-Tyne, the president (Mr. Thomas Oliver) in the chair. A paper on "Old English Statutes," by Mr. F. R. Wilson, of Alnwick, was read by Mr. R. J. Johnson, in the absence of Mr. Wilson. The president then delivered his retiring address. He said that at no period of its existence had the Association had so many members, and the financial position also was good. Referring to the question of the ownership of drawings, he asked whether he had not as much right to take out a patent for his model bath and wash-house design, or model chapel design, as a person had for his turret war vessel, and afterwards sell to the Government. He next referred to the necessity of the profession having a diploma. Referring to local improvements, he said that Newcastle now stood not unfrequently first, second, third, and fourth lowest in the death-rate of England. Mr. Fulton, the borough engineer, had reformed and regenerated his staff of officials, and had nearly overtaken the outstanding work of road-making, paving, flagging, and sewage of the districts at the east and west ends of the town. After speaking of the works of Grainger, who devised the comprehensive scheme of Grey-street, the Markets, the Central Exchange, the Arcade, Eldon-square, and Leazes-terrace, he said that at the present time they were carrying out a new street to the Central Station not so wide as Grey-street, with architecture far below in comparison to the eastern side of Grey-street. They were building cheaply, building poorly, not building constructionally or æsthetically equal to Grainger. —In the discussion which followed, Mr. Gibson Kyle said he was glad that the President had paid a tribute to Grainger. The buildings in the new street leading to the station, and in other parts of the town were suitable for business purposes; but some of Grainger's buildings were overgrown dwelling-houses with grand façade. —Mr. Matthew Thompson said that so far the buildings put up in West Grainger-street were of a much superior character both in design and construction to anything Mr. Grainger put up. —Mr. Hogg said Mr. Grainger no doubt provided the commercial part of the enterprise, but the designing part he did not.—A vote of thanks was unanimously passed to Mr. Oliver for his services as president during the year.—The President, in reply, said that in his address he did not mean so much to compare Grainger-street West and Grey-street, so far as the buildings were concerned. He could not say that the buildings in the new street were cheap buildings. The scope of his argument was as to the width, and line, and curve of the street.—The election of officers for the ensuing year was then proceeded with. Mr. F. R. Wilson, Alnwick, was elected president; Mr. M. Thompson, vice-president; Mr. James Hogg, treasurer; Mr. F. Charlton, secretary.

◆

IRON FROM THE SEA-SHORE.*

THE presence of black iron sand upon many sea beaches has long been noticed both in Europe and America. Their origin is to be found in the crystalline rocks, from the disintegration of which they have been derived. The action of the waves, by virtue of the greater specific gravity of these sands, effects a process of concentration, so that considerable layers of nearly pure black sand are often found on shores exposed to wind and tide. These black sands vary in composition according to the localities, but as found on the coast of New England and the Gulf of S. Lawrence they consist of magnetic oxide of iron, with a large admixture of titaniferous iron ore, and more or less garnet, the purest specimens holding from thirty to fifty per cent. of magnetic grains. Such sands have long been employed as sources of iron in India, where they are directly converted in small furnaces into malleable iron. Early in the last century the considerable quantities of these sands found on our Atlantic coast attracted the attention of the colonists and of scientific men in England, and the Virginia sand iron, as it was called, was the subject of many experiments. The first successful attempts at working it were, however, made in Killingworth, Conn., where the Rev. Jabez Elliot, grandson of the celebrated John Elliot, the apostle of the Indians, early turned his attention to the abundant black sands of the coast, and succeeded in treating them in a forge fire similar to the German forge or modern American bloomary fire. It appears from his account laid before the Royal Society of London in 1761, that he was then making iron blooms of fifty pounds weight from this ore, and that his son had already established a steel factory in Killingworth, when an Act of the British Parliament forbade the manufacture of steel in the colonies. The London Society of Arts in 1761 awarded a medal to Mr. Elliot for his discovery. The working, however, was abandoned, and for a century no attempts were made in America to use these sands. Some four years since the large quantities of them in the lower S. Lawrence attracted attention, and successful trials were made for their reduction in the bloomary fires of Northern New York, after which an establishment for working them was erected at Moisie in the Gulf of S. Lawrence, where, under the direction of skilled workmen from Lake Champlain, their treatment has been successfully carried on. These sand ores are remarkably free from both sulphur and phosphorus, and hence yield an iron of great purity and toughness. The working is effected in forges like those used on Lake Champlain, and presents no difficulties.

◆

BRÖNNER'S IMPROVEMENTS IN GAS-LIGHTING.

AT the last meeting of the Royal Institute of British Architects, the attention of the members was drawn to Brönner's patent system of gas-lighting, which consists of various sizes of burners and of globes and triangles, altogether differing from those of the usual fishtail burners. For instance, with the Brönner burners, the gas is allowed to pass out of the orifice from which it is emitted without that disagreeable hissing sound inseparable from most of the burners that have hitherto been supplied, and the flame thus produced is kept perfectly steady by the larger opening which Brönner's globes have in distinction to the ordinary globes. It is claimed by the patentees that these improvements effect a great economy in the use of gas, not merely in a diminished gas-bill, but (owing to the completeness of combustion ensured) in the immunity of goods, furniture, works of art, &c., from the injuries so often resulting from being placed in contiguity with gas-burners. By Brönner's system it is claimed that, with a far superior lighting power, the consumption is from 20 to 30, and sometimes even 40 per cent. less than by the burners in ordinary use. Experiments were made at the Institute on Monday evening with a Bunsen's photometer and other appliances with a view to test the correctness of these statements, and much satisfaction was expressed by the members present. The improvements have been tried in many large railway stations and public buildings with, it is said, invariably successful results.

◆

ASPHALTE UNDER FROST.

YESTERDAY (Thursday) the asphalte in Cheapside received its baptism of frost, and it is satisfactory to say that it is certainly not worse than the ordinary granite pavement under similar circumstances. Indeed, with a slight covering of gravel, cinder-ash, or even saw-dust, it is considerably better travelling, due, we suppose, to the slighter resistance to traction of the even surface of the asphalte roadway. It is true, however, that without a covering of grit of some kind the foothold of the horses was reduced almost to nothing; but even under these circumstances the asphalte held its place equally as well as the granite, for although on the one hand the inequalities of surface of the ordinary stone roadway afforded the horses an appreciable foothold, on the other the obstruction offered to the passage of loaded vehicles by the greater friction or heavier traction of the paved roadway was more than an equivalent for the extra purchase obtained from its comparative roughness. At any rate, the severe frost which had set in at the time of writing will amply test the respective merits of the two kinds of roadway, and it will be a pity if the want of a small quantity of sand or gravel, really necessary in both cases, is allowed to decide the battle between asphalte and granite in favour of the latter.

◆

COMPETITIONS.

New Schools, Newport, Salop.—In answer to advertisement, 34 sets of plans have been received by the committee, who have awarded the premium to Mr. John Ladds, architect, 4, Chapel-street, Bedford-row, and have instructed him to prepare specification and details for carrying out the works.

Offices for the City of London Union.—In this competition, the Building Committee of the Guardians, in a report presented to the Board-meeting on Tuesday last, recommended that Mr. Hudson's plan be approved as the best, and that he be employed to superintend the building. Mr. Hudson's plan would cost £7.800; Mr. Chambers's, £7,876; and Mr. Chatfeild Clarke's £9,500. The adoption of the report having been moved, Mr. Suter, one of the Guardians, moved as an amendment that Mr. Chambers's plan should be adopted, as he had followed out the instructions given, whereas Mr. Hudson had not done so. This amendment was lost on being put. Mr. Cox then moved another amendment—that Mr. Chatfeild Clarke's plan be adopted. This was seconded, and in the discussion that ensued, the majority of the speakers said they considered Mr. Clarke's to be the best plan. Upon this amendment being put it was lost, and the original motion was carried by 22 to 16; therefore Mr. Hudson's plan has been accepted. The Building Committee further recommended that Mr. Chambers be awarded the premium of £50 for the second best design; and that Mr. Chatfeild Clarke be awarded the premium of £30 for the third best plan. These recommendations were adopted.

◆

The next meeting of the Royal Institute of British Architects will take place on Monda January 9, 1871, when Professor Anstead will rea a paper on the selection of building sites.

---

* Read by Prof. T. Sterry Hunt before the American Association for the Advancement of Science.

ON TASTE IN ART.—II.

It will not have been sufficient merely to have asserted that taste in art is ruled by definite laws, and that its cultivation is an indispensable adjunct to the progress of art, but it will be further necessary, by a consideration of the works of past ages, to see whether such a statement is borne out. If I succeed in showing that wherever one or other of the component forces necessary to the proper development of taste was insufficiently or wrongly developed art became stationary, and did not progress beyond a certain point, I shall have established some claim to have the hypothesis that they are necessary to such development admitted.

To do this satisfactorily, without at the same time becoming too diffuse, it will be sufficient to consider the arts of China, Egypt, India, and Greece, as these four countries are the best examples of the partial or complete development of the static and dynamic forces. The people of China belong exclusively to the Turanian, Mongol, or Yellow race, and up to a certain point their development was remarkable. They possessed the art of printing, the mariner's compass, and were weavers of silk long before ourselves. Their moral principles are beyond all praise, those of Confucius being hardly surpassed by our modern philosophers. Their art is, however, particularly childish. In common with most of the eastern nations, they possess a very correct taste in colouring, and some of their ornamentation is remarkably fine. But it is the idea that they lack. The power of the intellect which produces "purpose" and "unity" in a work of art is with them quite undeveloped. They are very imitative, but cannot originate, or use the faculty of reasoning. They will in portraying the head of a tiger endeavour to reproduce every single hair, but when the whole is finished, it resembles the object only in so far as that the skin will be well imitated, but the expression of the nature, the whole notion of a tiger, will be entirely wanting.

The causes of this crude state of their art are not only to be traced to their deficiency in brain, but also to the checking character of their moral laws. They have paid too much attention to regulating morals, and have left the intellect a very limited scope for action. The consequence is that they are quite without correct taste, and will look at pictures that are exquisitely beautiful without emotion, being unable to realise the idea of the artist.

In turning to the Egyptians, we shall observe in their works a decided progress in art, but shall find that, like the Chinese they became stationary. We shall find that as long as they adhered to nature-worship, leaving their intellectual capacities unhampered by complicated moral forms, their productions far out-did those of the Chinese. When, however, their religion "was unfolded by priestly science into a tedions ceremonial,—when a system of hierarchy and castes wound itself through all branches of public activity"—when their art was regulated by immutable canons—when, in fact, they devoted themselves exclusively to the cultivation of their static nature, they ceased to produce any works of art worthy of the name. In their tastes they resembled the Chinese more than any other nation that has since existed. These two nations have been checked in their development by a neglect of the intellectual force, and of their works one cannot do better than repeat the words of Goethe, "Chinese and Egyptian antiquities are at the best but curiosities: it is very well to make oneself and the world acquainted with them, but they are of slight avail for our moral and æsthetic culture."

The development of the Indians, on the other hand, is widely different. The works of this nation will prove that the intellectual force when cultivated alone is as powerless as the moral in producing a correct taste in art. The Indian nation, the rulers, priests, and warriors of which were of the Aryan race (our own),* were a people of great intellectual endowments, which they displayed in a refined cultivation of language, a very ancient speculative theology, and a fanciful style of poetry; but nevertheless they were ill-adapted for the cultivation of the constructive arts. The calm contemplativeness of earlier, and the glowing riotous fancy of later times, found in the domain of natural forms no expression in the systematic development of which they could rest satisfied; and although the hierarchical system and the great endurance of Indian workmen achieved much that is worthy of admiration in the excavation of grotto-temples and the hewing out of entire mountains, yet we miss altogether the directing mind which could, without a model, have employed and controlled this industry and expenditure of force for architectural purposes. On the contrary, we see here art roaming about with inconstancy amid an abundance of forms, and if it almost by accident lights on the simple and grand, is incapable of using it and carrying it out as an established and recurring form of art. Hence we see that the intellect of the Indians, being left to run wild, so to speak, lost itself in the contemplation of an exuberant nature, producing monsters when endeavouring to typify or represent it. That the Indians had an art no one can deny, but this art is in no respect worthy to be called tasteful. The vast rock-hewn temples of Ellora may impress the mind, just as would the pyramids of Egypt, by causing it to reflect on the vast amount of labour and energy expended on them, but they can never excite the emotion of beauty—the Indian temple, because there is no harmony and eurythmy in the construction; the Egyptian pyramid, because it expresses only a geometrical form. In Greece,† however, we may perceive the working of a correct taste. This correct taste has been referred to many causes. Aristotle supposes climate, Barry the form of government, and others general beauty of the corporal frame to have produced it. But if these suggestions are correct, why are the modern Greeks inferior to their ancestors? Why are not the republics of the present day remarkable for their art? And how is it that in Sparta, where beauty was so greatly prized, art did not progress at all? Or, again, how do we account for the fact that Cicero stated the Athenians were plain; and even were this not so. How is it that the Circassians and Georgians of our own days, though beautifully formed, are not distinguished in art? D'Hancarville, in his "Researches into the Origin and Progress of Art in Greece," asserts that Homer taught the Greeks to express beauty by often praising it, and sometimes referring them to its laws. Why then does the perusal of Milton not produce great artists in our own day? Art is only to a certain extent dependent upon poetry. They are sister arts, each inspired by the same sentiments, but their means of expression are totally different. The reason of the really perfect development of taste attained by the Greeks is to be found elsewhere. With great truth does Müller observe (in the work before referred to) that "of all the branches of the Indo-Germanic (or Aryan) race, the Greeks were that in which sensible and spiritual, internal and external life were found in the finest equipoise; hence they appear to have been from the first most peculiarly fitted for the independent cultivation of artistic forms, although it required a long process of development and many favourable circumstances before this feeling for art, which showed its activity so early in poetry and mythology, could be also transferred to external matters, and ripen into sculpture." It was, therefore, to the balance of the two forces, both being properly cultivated and developed, that the Greeks owed their art.

The Greek nation was the first to free itself from the trammels of superstition, which oppressed with such fatal effect the nations of the East. Its religion was one of beauty, and the fact that its gods were imagined to be exquisitely formed men and women prevented them from constructing monsters, and at the same time gave a great impetus to sculpture. But the Greeks, in freeing their intellects, did not discard morals. Their deeds were lofty, their aspirations noble, their respect for virtue unbounded. The developed taste of each member of the commonwealth was the highest incentive to the artist. Each man laboured for distinction and sought no other reward than glory. Their humanising religion induced them to decorate their temples with the most exquisite human forms, and the writings of their philosophers gave them correct ideas of beauty and directed their efforts. Here was indeed a golden age for art. Science, accompanying and supporting it, produced that union which is so indispensable, and together science and art reigned supreme! The Greeks were thoroughly conversant with the laws of beauty, which their moral and intellectual development enabled them to appreciate. They shunned the exact and slavish copying favoured by the so-called realistic school, and produced not mere men and women in stone, but superior beings, reflecting the soul, the thought, of the artist, each production beautiful, and still unsurpassed. It is sad to think that such a state of perfection should have decayed, and that we should at the present day be vainly striving to attain what this nation once possessed. But what caused the downfall of the Greeks? This question can be answered by any student of history. Their neglect of morals. They lost their reverence for honour and virtue, and their love for liberty. In doing away with all checks upon the intellect, they ran into an extreme; the result was license, and their decline inevitable. The conquest of the country completed the ruin of the Greeks, and their art and philosophy became things of the past. All that we possess of their works excites our admiration, and at the same time our regret that the most artistic nation in the world should have passed away. Thus have we seen that correct taste in the people is indispensable for the production of tasteful works of art, and further, that in nations in whom the intellectual and moral forces are not developed and balanced such taste cannot exist. This is borne out in the case of the Chinese and Egyptians, those nations having developed the moral, but not the intellectual force; in the Indians, whose intellectual force alone was nourished; in the Greeks, with whom, for a time, a balance of the forces, and consequently a correct taste, existed, which, by a disturbance of this balance, subsequently disappeared.

But now a word with regard to our own taste. Are we simply to study Greek forms, and then think we have attained all the elements necessary to good taste when we have once acquired a smattering of the history of Grecian art? By no means; whilst admiring the beautiful productions of the past, let us not lose heart for the future. Let us avoid that ridiculous pedantry which praises the Greek merely because it is Greek, and contemns modern productions because they are not Greek.

But can it be affirmed, admitting the importance of taste, that we have this necessary faculty, and that it is at least fairly developed in us? I think not. West, the President of the Royal Academy, said "that he knew of no people, since the Greeks, who had indicated a higher promise to equal them than the British nation. But he added that this could only take place when the whole mass of the people should awake to the usefulness of the arts, and to the splendour which they confer." This is just what is wanting now. It may be true that we are endowed with the capacity necessary to produce tasteful works of art, but our people do not know what taste is, and the consequence is that our productive powers are latent. When both the people of England and also the artists are educated as they should be, we shall be better able to judge of English taste.

---

* Muller, "Handbuch der Archæologie der Kunst," Breslau, 1818.

† Falkener, "Dædalus," London, 1860.

There are many prejudices and many erroneous opinions to be combated before educated taste can be obtained. For instance, what does Mr. Yapp, who has written an in other respects, commendable pamphlet mean by "technical education," which, in his dedication to the Society of Arts, he praises that body for having spread? Probably that so-called "education" which consists in teaching an art-student drawing, a carpenter carpentry, or a shoemaker how to make boots and shoes. But is this really worthy of the name "education," or is it only mere instruction? A man may be able to write beautifully, but he will not necessarily be able to write a book; and a student does not become an artist merely because he has learnt to draw. No; the writing and drawing are of course necessary items in the instruction of any man who would wish to become either poet or painter; but what have they to do with "education"? In what way do they draw out and develope the intellectual faculties? In no way whatever. Here then we have one great error which must disappear. Let our public and our artists be educated generally, and let their technical instruction be considered as assisting them only, not as all-important.

"The French nation," says Mr. Yapp, "have been distinguished for many generations by the great encouragement they have bestowed as a nation on the fine arts. The French Government, under every change in its outward form, has not failed to regard art as one of the most important instruments of civilization."

Further, he asserts that "of the two thousand works of art annually exhibited at the Louvre, at least a fourth part is the production of artists who, though engaged through the year in the preparation of patterns for manufacture, gratify their taste, or (it may be) their vanity (?), by executing in their leisure hours some picture or statue for the Exhibition. In England, the employment of an industrial artist as a recognised and lucrative profession can hardly as yet be said to exist; and were this once created, through the agency of schools of design, it would prove a sufficient remedy for any misdirection of the student's acquirements. The profits of a designer for industry in France are greater than those of a second-rate artist." Thus we need not fear that if we educate the taste of our designers they will get too proud to do their work; nor need we share the apprehensions of Mr. Yapp that they may become vain! As long as advocates of education think a striving for higher attainments mere vanity, there is little hope for real progress in art. Not the designer alone, but his employer also, and his employer's customers, must be educated, otherwise the artists can have no incentive to produce tasteful works. Let the cry of every true friend to art, therefore, be "educate;" educate on general principles, on the model of the French and German schools, and we shall soon be astonished at the wonderfully rapid progress that will take place, both in English taste and in English art. H. C. Z.

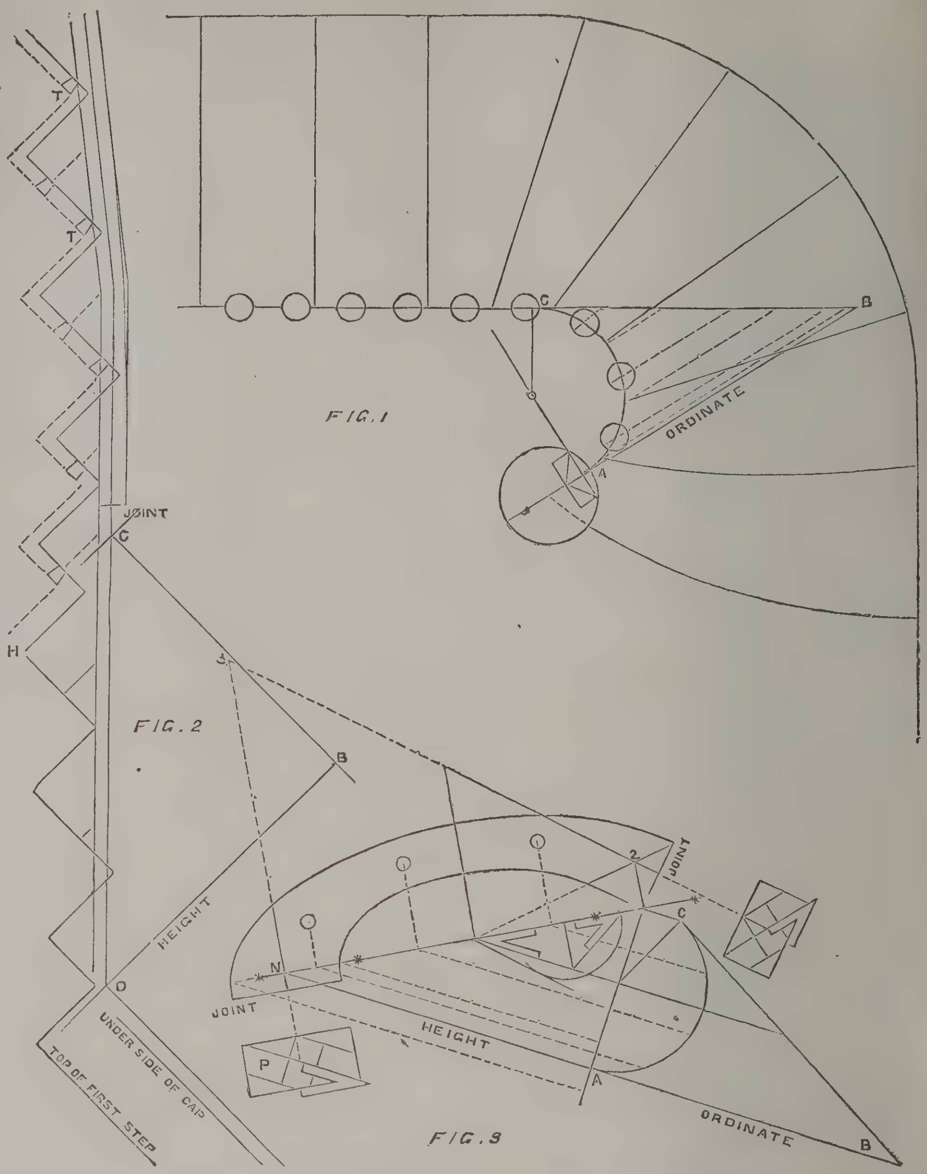
◆

NEW ELEMENTS OF HAND-RAILING.*

(*Continued from page* 446.)

Plate 14.—A Wreath to stand over Six Winders and start from a Newel.

FIG. 1 exhibits ground plan of stairs starting with curved risers. Cylinder twelve inches. Narrow end of winders is equal to half a square step, this plan being still more contracted than that on preceding plate. It shows that the number of winders is not limited in consequence of having a small cylinder.



NEW ELEMENTS OF HAND-RAILING.—PLATE XIV.

There may be two, or even three of the narrow ends thrown into the straight. This should always be the case with stairs having winders and square steps, as it gives both rail and string a much better effect than having winders terminate on spring line. You perceive the tangents on this plan intersect at B, and form the acute angle; the lengths of A B and C B are equal. The dotted lines cutting C B are drawn parallel with ordinate, and give direction to find position of winders cutting centre line of rail, also length of balusters.

Fig. 2 shows winders unfolded or spread out. Let C B equal corresponding letters on plan. Transfer intersections made on C B, Fig. 1, to C B on left. Then drop perpendiculars, and you have risers standing in same position as those cutting circle on plan. The dotted perpendiculars show position of balusters under wreath. The under side of rail rests on centre of short balusters T T. The winders and square steps beyond spring-line C stand in the same position as those of Fig. 1. The pitch over the winders is made to cut at D. It may be raised or lowered to suit any height of newel. Letters B D show height of wreath.

Fig. 3 shows construction of mould. This method differs in no respect from that already explained. For example: Start by drawing any straight line, say that marked "Height" and "Ordinate." This done, take any point, say A. Square over. Next, draw circle. Let it and tangents A, B, C equal those on ground plan. Let height A N equal D B on left. Join N L. This gives pitch or major axis.

Lay the board on and strike the mould as usual. See that the tangents 2, 3 equal D C, Fig. 2. The square sections show joints and application of bevels. Slab P is on the under side of stuff. Cut it off square with joint. The drawing represents under side of wreath and position of balusters. The dotted lines drawn from circle on right being their centres, corresponding with those on plan, Fig. 1.

◆

CHURCH OF SS. MATTHEW AND JAMES, LIVERPOOL.

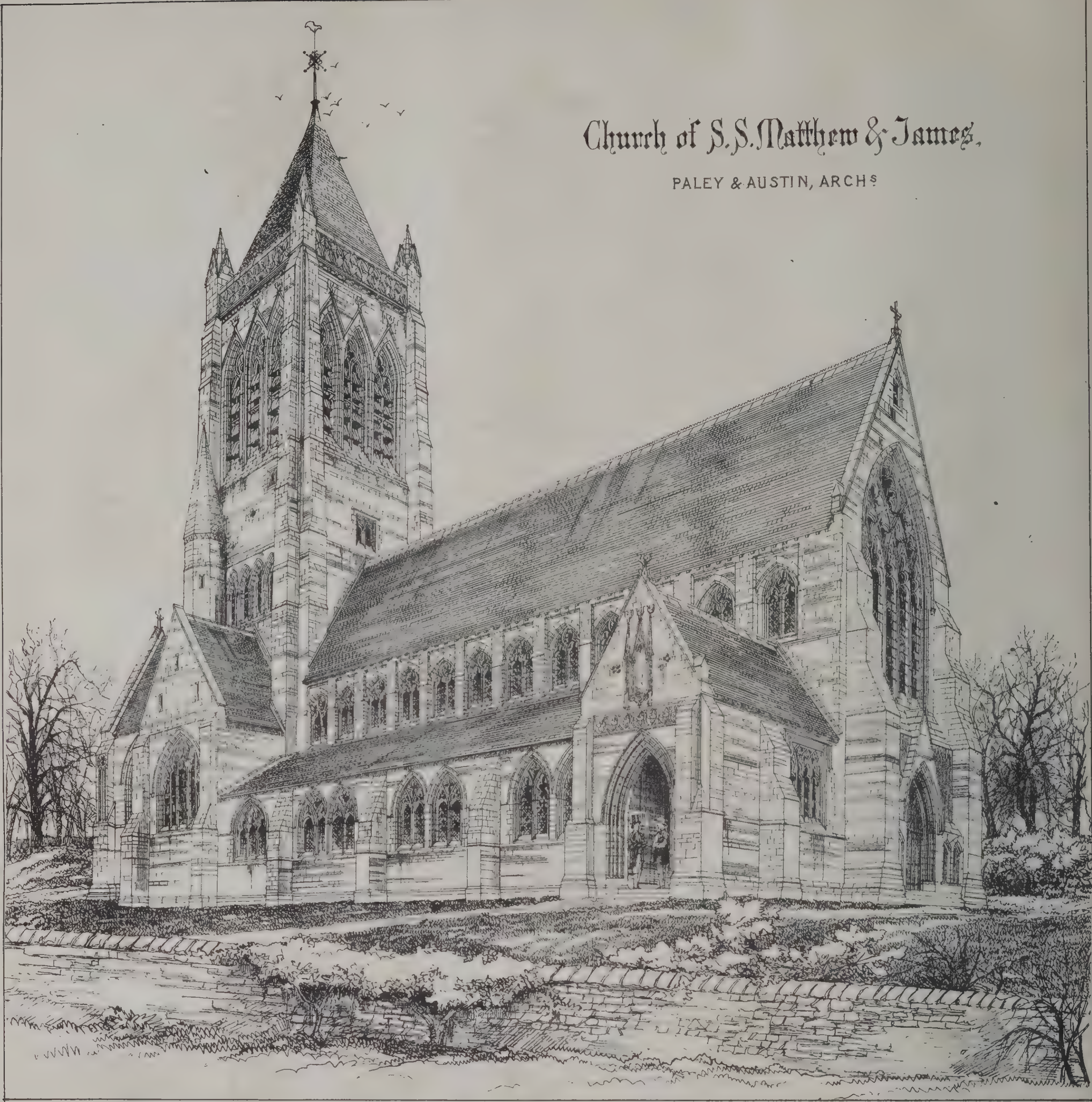
THE late Mr. Glenton having left funds for building a church and parsonage at Mossley Hill, Liverpool, his trustees last autumn invited a limited number of architects to send in designs, when that of Messrs. Paley & Austin, of Lancaster, were selected, the plans having previously been submitted to Mr. Christian, of London. The contract has been taken by Mr. Winnard, of Wigan, and the church, of which we subjoin a view and ground plan, is being built on a very beautiful site, commanding extensive views of the Aigbruth district and Mersey Valley, and about a quarter of a mile to the west of the Mossley Hill railway-station, the stone (new red sandstone) being for the most part quarried on the site. There will be accommodation for 800 adults, and the sum to be spent upon the church and parsonage is £12,000. The following are the principal heights:—Floor to wall-plate, 40ft.; ditto to ridge, 65ft.; ditto to top of tower-roof, 145ft.; ditto to parapet of tower, 117ft.

◆

Walton.—Last week a small chapel erected by the Wesleyan body in Walton was opened for divine service. The structure is 32ft. wide and 50ft. long, and will accommodate about 300 persons. It has cost £700. Mr. S. Middlebrook, of Walton, was the architect, Mr. Hugh Hughes, of Kirkdale, the builder.

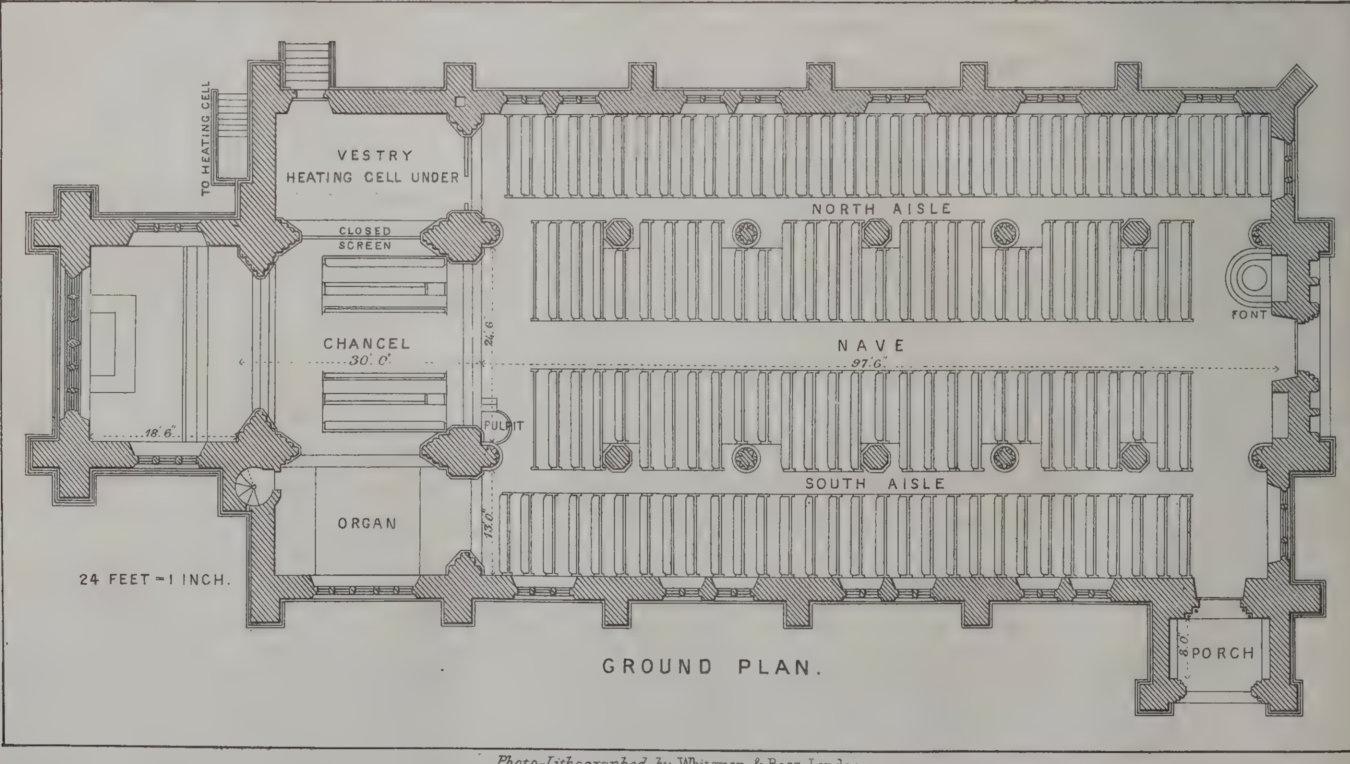
---

* This series of articles is a reproduction of Robert Riddell's work on the subject, published in Philadelphia, and by Trübner and Co., London.



Church of S.S. Matthew & James.

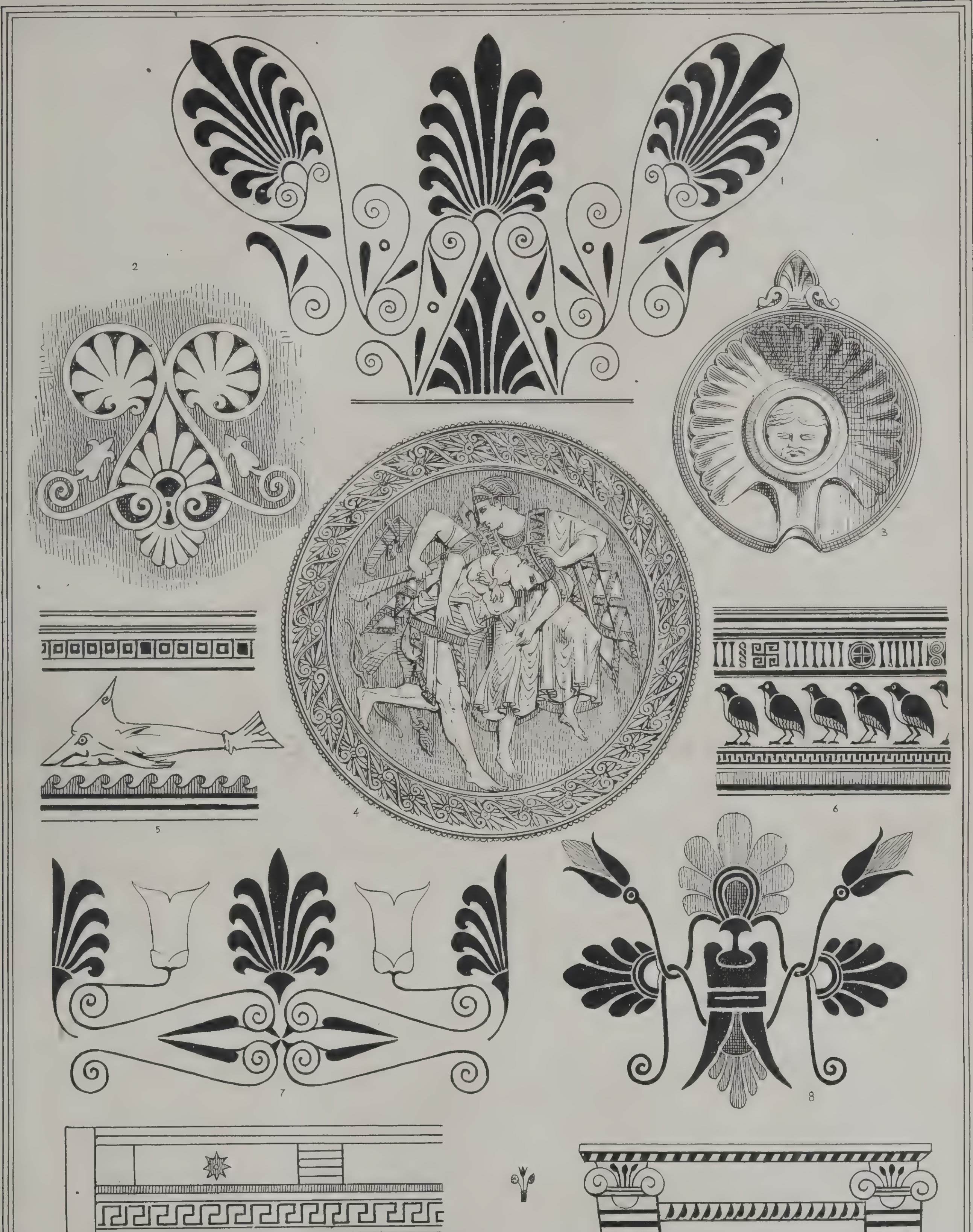
PALEY & AUSTIN, ARCHs



GROUND PLAN.

Photo-Lithographed by Whiteman & Bass, London.

The Building News, Decr 23rd 1870.



GREEK AND ETRUSCAN ORNAMENT. DRAWN BY O. W. DAVIS.

Owen W. Davis, del et lith

Printed by Whiteman & Bass

Furniture & Decoration.

HOUSE PAINTING AND DECORATION.

By "An Experienced Workman."

DECORATIVE PROCESSES.

(*Continued from page* 433.)

WE have very considerable doubts as to whether polished paint may be considered in good taste when used for the interiors of drawing-rooms, or, in fact, of any room. There is a want of repose and a garishness about gloss colours which is scarcely compatible with that quietness and repose so necessary to the perfect satisfaction of the educated eye. Polished glass is beautiful, and never out of place; the same may be said of marble, of gems, and of all steel work or instruments. With all these polish is the one thing needful to develope their beauty and finish, and, in fact, is a necessity of the material. This is so self-evident that we never for a moment doubt its propriety or imagine it would be better otherwise. Fitness, beauty, and utility are a consequence of the polish in all these cases, and therefore proper and right from every point of view; but the same reasoning will not apply to polished paint, that is to say, plain tints of colours. Of course, imitations of woods and marbles may be polished with propriety and without offence to good taste, simply because we expect to see them so, and they would not be finished if left unvarnished and unpolished. But it is otherwise with plain colours, which, when glossy, have too much the look of the japanner's shop or the tea-tray business. These remarks apply principally to that so-called enamel work which is produced by the mere painting of the work and finishing it with varnish, and which, as a matter of course, soon becomes discoloured, and even when first done is a mistake in name and execution, and a gross offence against good taste. The best enamel work—of which there is but little done in consequence of its great cost—is free in some measure from the objections urged against the common work. Its manipulation requires so much patience and care that it is a difficult matter to find men who have the necessary qualifications requisite for preparing such work, and therefore it is very rare to see a really good job. In getting up enamel work, much care is requisite in the selection and use of the material required. The filling-up colour, which forms the body of the enamel, is of the greatest importance to the ultimate success of the work. Of this material there are several kinds manufactured—black, brown, and yellow, for coach-painters, japanners, and others; but for use in interior decoration we prefer to use the white lead filling, as we can, by adding the necessary staining colours (which do not affect the properties of the enamel) form a solid body of colour of the same tint, or nearly so, as that with which the work is required to be finished, and thus do away with the objections which may be urged against the black or dark-coloured filling. For it will be evident to the plainest comprehension that if work which has to be finished white, or with very light tints of colour, be filled up with dark-coloured filling, that the number of coats of paint which will be required to obscure or kill the dark colour will be so many that there is great danger of the work becoming rough and uneven in parts —at all events there can be no question but that work which is left with a smooth even surface, produced by rubbing alone, must be much finer in texture than any that can possibly be left by the brush. The white lead should be ground stiff in turpentine, and about one-fourth part of the ordinary white lead ground in oil added to it, in order to prevent the enamel cracking, which it has a tendency to do, except there be some little oil mixed with it. A sufficient quantity of polishing copal or best carriage varnish should now be added to bind it so that it will rub down easily, which fact cannot be properly ascertained except by actual trial, inasmuch as the drying properties of varnishes vary, and other causes influence the matter. If there is too much varnish in the stuff the work will be exceedingly difficult to cut down, and if too little it is apt to break up in rubbing, so that it is always the safest plan to try the enamel colour before commencing anything important. The colour, being properly mixed, should be laid on the work in the ordinary manner, using it rather freely. It may be as well to state here that no filling should be put upon new work without the same having had two or three coats of ordinary oil-paint, nor on old work without having one coat. This gives a key for the filling to bind to. Successive coats of the filling should now be laid on the work until there is a sufficient thickness to cut down to a level surface, filling up the whole of the indentations and undulations of the panel. One day should intervene between each coat, in order to allow it to harden in some degree. When a sufficient number of coats is put on (which number will of course depend upon the state of the work to be filled up) it should stand for a fortnight or three weeks, until it is thoroughly hard; it will then be ready for cutting down, which is done with felt, ground pumice-stone and water. The felt used should be such as the marble masons use for polishing marble, which varies in thickness from one-eighth to half an inch, and about three inches square. This should be fastened by the aid of patent knotting or other resinous gum to square pieces of wood of the same size, but one inch thick, so as to give a good hold for the hand in using. These peices of wood, covered with felt, may be made of any size or shape to fit moulded surfaces or other inequalities. The pumice-stone to be used should be of different degrees of fineness, and should be carefully selected, so as to be sure that it is free from any foreign substance. It is sold ready ground, but in situations where it cannot be conveniently got it may be prepared from the lump, by grinding or crushing with a stone and muller, and then passed through fine sieves or muslin; by using these of different degrees of capacity the ground pumice may be produced of different degrees of fineness. Except great care is exercised in this matter, it will be found that particles of grit will be mixed with it, which in using get on to the work, and make deep scratches, thus causing endless trouble and annoyance, besides spoiling the work. The greatest care is also required in keeping the felt clean and free from grit. Many workmen are careless in this matter, and when working set down the felt on the step-ladder or floor, and thus particles of sand or grit get upon it, and so mischief is done. In cutting down, it is best to use a piece of soft lump pumice-stone to take off the rough parts. The felt and ground pumice should now be used with water, the work should be wet with a sponge, and the felt soaked in water, and then into the powdered pumice, and the work rubbed with it, keeping it moderately wet and rubbing with a circular motion, and not straight up and down and across, with a light touch, using only just as much pressure as will cause the pumice to bite, which will be very clearly felt while the hand is in motion. Much care and patience is required to do this properly, for if the pressure is too great it forces the pumice into the body of the filling colour, and scratches it instead of cutting or grinding it fairly down. No hurry will avail in doing this work, it must have its time; hurry only defeats the end in view, and often causes much unnecessary labour. A scratch caused by want of care and too much haste will often throw the work back for days, and involve the cost and labour of refilling. We find in practice that the purpose is best answered by using the pumice-stone, the coarser kind first, then the medium, and finish with the finest last. It will be found advantageous to let a day elapse between the rubbing, for when the surface is cut down the filling will in all cases be softer underneath, and if it is allowed to stand for a day the newly-exposed surface gets harder, and of course rubs down better in consequence. The pumice-stone should be well washed off the work occasionally, in order that we may see what progress is being made and if it requires more rubbing or not. If while in progress it is found not to be sufficiently filled up, it may have one or more coats of filling after it has been roughly cut down, and before much labour has been spent upon it.

When sufficiently rubbed down with the pumice-stone—that is to say, when it has been cut down to a fine, level, and uniform surface, the work should stand for a day or two to harden. It will now depend entirely upon the work as to whether it must be polished upon the filling, or whether it will have to be varnished and polished. If the filling is of the right colour, and has rubbed down of one uniform tint, we prefer it to be finished in this state, because, in the first place, it will have a surface and texture which cannot be got by any other means. Finished in this state there is an absence of that glare-polish—if we may use the term—which is inseparable from varnish polish. It has all the uniformity of surface and evidence of finish without that appearance of varnish which is so objectionable, and therefore we prefer it to any varnish polish. After it has stood a day or two, the work, if it is intended to be left in the state we have been speaking about, must be polished in this wise:—Take a clean felt and rotten-stone, either in oil or water, and with this rub the work as before, until the polish begins to appear; then take a boss (*i.e.* a ball of cotton wool inclosed in fine silk), put the rotten-stone upon this and keep rubbing with the circular motion until the polish is uniform and equal all over. The rotten-stone must now be carefully cleaned off; if it is in oil, clean off with fine flour; if in water, with sponge, and wash-leather, and water, taking care not to scratch. A clean damp chamois or wash-leather will now be required, which must be held in the left hand, leaving the right perfectly clear. Now use the ball of the right hand, press gently upon the panel, and draw it forwards or towards you; if this is done properly, it will bring up a clear polish upon the work. The hand should be kept slightly damp by drawing it across the leather almost every time the hand is drawn forward. If this is done effectually, a rustling sound will be produced while the hand is in motion; if this is so, the polish will be sure to follow. The polish thus produced on the filling alone will be of the kind we have spoken of above, and will not be at all objectionable to even the most fastidious taste; but if the work has to be finished with a brilliant lustre and to a high degree of polish, it will, after being cut down with the pumice and felt, have to be coated with two or more coats of the best polishing copal varnish, having a quantity of the best flake white from the tube (of which pound and half-pound tubes may be procured from Winsor & Newton, or other artists' colourmen); this should be mixed with the varnish in sufficient quantity to form a creamy mixture, with which the work must be coated—one, two, or three coats, as may be desirable. This should stand for three or four weeks, until it becomes hard, for the harder it is the better it will polish. It must then be cut down with felt and the finest ground pumice-stone in water, and polished with the rotten-stone, as before described. By this means a bright and brilliant polish may be obtained of a very enduring nature. The same process will of course answer for all varnished imitations of woods and marbles, and all work which will admit of the application of oil varnishes When the object varnished can be put into a stove (such as japanners use) to harden the varnish may be made hard enough to polish in a few hours, but with work which cannot be subjected to the action of great heat, time must be allowed for the varnish to become hard enough to polish. Putty-powder is also used in polishing, but whatever material or process is used the principal and absolutely necessary quality to produce successful work is gentle and careful rubbing, unwearying patience, and cleanliness in working.

◆

GREEK AND ETRUSCAN ORNAMENT.

THE authenticity of many of the works called Etruscan, which have reached our times, is liable to be questioned. Much of the renown which belongs to the Greeks has become, as it were, the inheritance of these people; but from the peculiar constitution of their government and the state of society in Ancient Etruria, it has been conjectured—not without the appearance of reason—that the works in bronze and clay, and the bas-reliefs attributed to them, were the produce not of the dominant race but of their subject bondsmen or serfs; and that, in reality, the Etruscans—called by themselves Rasena, and by the Greeks Tyrrhenians or Tyrsenians, who were but emigrants from Asia Minor—were as little given to the arts as the Ancient Romans, by whom, in their turn, they were vanquished.

Works of art were probably executed in Etruria previous to the arrival of the Greek colonists in North Italy and South France; "but," says a writer on this subject, "The more rude and ancient specimens are exactly in the style of the Ancient Greeks, from whom they appear to have learned all they knew, and whose primitive style they continued to copy, following their archetypes strictly and servilely, but in a most elevated and dignified manner, founded upon more enlarged principles than had been adopted by the Greeks." The Etruscans, when their taste had once been formed, treated their own conceptions in the spirit of their masters; and though, no doubt, inferior in grace and delicacy of execution, they acquired a correctness in drawing which may almost be called a national characteristic.

We have selected for one of our illustrations a few details of this early classic art, drawn from authorities contained in the Louvre and the British Museum. Nos. 1, 2, 7, and 8 are from painted vases, which we reproduce as elegant examples of handling in honeysuckle ornament; Nos. 5 and 6 are spirited examples of Rhodian ware; No. 3 is a confectionary mould; and No. 4 the bronze back of a mirror-case, representing "Herakles bringing back Alkestis from Hades;" Nos. 9 and 10 are seats from drawings on Tarquinii vases.

From these few specimens we see how their producers united art with manufacture, which appears to derive its chief value from the former with the Greeks in their domestic utensils. Many of these articles have an emblematic form, which happily combines beauty and allegory. Thus they surrounded themselves in their households with objects which kept alive their poetical faith and sense of artistic beauty. O. W. D.

◆

METROPOLITAN TRAMWAYS.

THE first section of the North Metropolitan Tramway Company's line viz., that from Whitechapel Church to Bow, has now been working for more than six months, and if the result of the first half-year can be taken as an earnest of its future prospects, it may be looked upon as a commercial success. The capital expended on this section amounted to £46,500; the receipts for the six months to £8,557, and the expenditure to £4,633, leaving a balance of £3,924, out of which a dividend of 12 per cent. was declared, leaving upwards of £1,000 to be carried to the new account. No fewer than 1,053,181 passengers were carried during the six months, without any accident attributable to the fault or neglect of the company or of their servants. If this result has been obtained in a comparatively poor neighbourhood, and on a line which neither runs far enough into the city nor to a sufficient distance from it, the success of those lines which are now in progress or proposed, such, *e.g.*, as the one along Moorgate-street to Islington and Highbury, cannot be the source of much uneasiness to their proprietors. The East-end line is in process of extension towards Stratford at one end, and the city at the other, the limit of extension westward being, we believe, Aldgate Church, just within the boundary of the city. In going to Stratford the tramway will enter into competition with the Great Eastern Railway, which from this immediate locality has a large and increasing traffic to its stations at Fenchurch-street and Bishopsgate. If the "tram" can successfully compete with the "line"—which we doubt—the future of tramways will be free from anxiety, and the shares will rapidly increase in value. One of the chief reasons we have for doubting its success is that the slow pace at which it invariably travels will not suit business-men. For a journey of two miles, lasting no longer than half an hour, the tramway may meet their requirements; but it is a very different matter when the distance is increased to four miles, and the time taken to an hour. Men in a hurry to get to business, or anxious to reach home, will not care to be longer than is absolutely necessary in reaching their destination, even for the sake of riding in the company's comfortable vehicles, especially when the fare will in all probability always exceed that of the railway. The best, and, we believe, only possible way to make tramways successful competitors with the railways, is to furnish them with locomotives, or road-steamers, capable of drawing two or three cars of passengers at a rate of eight miles an hour. This is not by any means a dangerous speed, and, with ordinary precautions, we do not see why locomotives or road-steamers should be forbidden the public streets. As a rule the tramways themselves are only permitted on broad and open roads, where there is ample room for the traffic; and we have not the slightest hesitation in saying that a street-locomotive could be made which might be stopped more readily than many of the vehicles which are now allowed to be driven recklessly along our principal thoroughfares. Tramways, as we have them, are a great improvement on the noisy lumbering omnibus; let us work them by steam, and so make our means of conveyance worthy of the age of progress in which we live.

◆

FRIENDLY OPERATIVE CARPENTERS' AND JOINERS' SOCIETY.

THE 43rd annual report of the General Union of this Society of Great Britain and Ireland has just been issued, from which we gather that the expenditure upon benefits by the associated lodges shows that the total expenditure upon the various benefits combined is £13,190 9s. 10½d., being an increase over last year's gross outlay of £2,524 6s. 11½d., which, with a decrease of 455 members, compared with the average number of last year, gives an outlay equivalent to £1 18s. 3½d. a-head for the year's disbursements. Taking the payment of 8d. per week as a criterion, it will be seen that the outlay exceeds the income tc the extent of 3½d. per member, irrespective of each lodge's working and incidental expenditure. The enormous sum of £2,396 7s. 8d. has been expended on strikes and turn-outs, being £1,199 10s. 6d. above the sum expended in the previous year. Of the amount named, £2,171 12s. has been absorbed in continuing the unsuccessful strikes at Blackburn and Darwen; Preston, £66 14s. 8d.; London, £36 9s. 8d.; the remainder being made up of smaller sums, minute details of which are given in the balance sheet. The expenditure on account of loss of tools by fire has been exceedingly light, amounting only to £63 16s. 9d., whilst the tools purloined have caused an outlay of £113 2s. 10d. To members travelling in search of employment the sum of £342 12s. has been paid. The benefit for relieving members out of employment has absorbed £5,307 9s. 1d. (the two last items being largely affected by the strikes previously noticed), and the disbursements on sick and superannuation account have reached £2,964 14s. 11d. The outlay to sustain the funeral and accident benefits gives a total of £1,112 which has been absorbed by the claims of five members to the accident benefit of £50 each, while the obituary gives a record of 63 deceased members of £10 each, and 58 members' wives of £4 each. The number of lodges is now 136, against 143 last year.

KENSINGTON SCHOOL OF DESIGN.

THE annual distribution of prizes to the students of this school took place on Friday last in the lecture-hall of the South Kensington Museum. Sir Francis Grant, the President of the Royal Academy, presided, and distributed the prizes, with the assistance of Mr. Cole, C.B., Mr. Redgrave, Mr. Burchett, the head-master of the school, &c. At the close of the distribution Mr. Redgrave addressed a few words to the students on the principles of art, and the objects at which the students ought to aim. Sir Francis Grant then addressed the students. The proceedings were opened by Mr. Burchett, who made a statement regarding the position, use, and progress of the schools. From this it was gathered that the medals and other prizes about to be distributed were won in the local and national competition of 1870, and the works to which they were awarded were executed in the twelve months preceding the April of that year. The prize winners were the students of the two schools at South Kensington, one for male and one for female students—the schools being in competition with each other and with all those of the United Kingdom. The competitors did not, however, include all the students of the two schools, those in training for future masterships aud the national scholars not being eligible to compete for the school prizes. The medals and books to be distributed represented only the highest grade of distinctions obtainable by students, the minor honours not being included; they consisted of three gold medals, six silver medals, ten bronze medals, and twelve Queen's prizes of books, all won in the national competition, besides 42 prizes of books and 37 free-studentships won in the Local Prize section. This included the whole of the prizes gained at the great annual competition. At the second grade examination in March, consisting in examination by written papers in geometry and perspective, and exercises in freehand and model drawing, 144 students "passed," 60 won "prizes," and 9 students won admission at half-fee by obtaining certificates of the second grade. At the third or highest grade examination 13 students obtained the teacher's certificate. Since the last distribution of prizes eight students had been recommended from these schools for admission to the Royal Academy, and a total of 22 had been admitted by drawings made in these schools. Besides the regular prizes and distinctions, occasional prizes had been offered by the Department and by manufacturers during the year, some for general competition, and some only for this school. By the Department £22 was offered, in eleven prizes, for fans, the competition being limited to female students. Eleven students of this school competed, sending in 15 designs, and Misses Montalba and Brooks obtained the first and third prizes, to the value of £7. The Worshipful Company of Plasterers offered prizes of £25 for designs for a "capital of a pilaster" and a "diaper for wall decoration," limiting, however, this school to one subject. Two students, Messrs. Galli and Marshall, obtained the prizes, of £8 8s. and £5 5s. respectively. A prize of £5 was offered by Mr. M'Crum, of Milford, Armagh, Ireland, for designs for table damask. For this there were 26 competitors and 34 designs. The prizes were won by Messrs. Marshall, Wilson, and Nunn. Prizes of £2 2s. and £1 1s. were offered for the decoration of a tramway car. Thirteen designs were made, and the prizes weae obtained by Messrs. Claussen and Harris. A steady and progressive success continued to mark the career of the school in which these honours and rewards had been won. In the half-year ending February 29, 1864, the number of students was 382; the amount of fees, £878 11s. For the year ending July 30, 1870, the total number of individual students has been 994, and the amount of fees for the same £2,623 14s. Among this number of students, 565 were males and 429 females; 215 were free students, consisting of students in training, national scholars, scholars who have won free studentships, a detachment of Royal Engineers stationed at the Museum, and other *employés* of the Department. There were at the present time in the school 34 students in training for art masters or designers, 9 of whom were females; and 20 national scholars who were being educated as designers.

◆

In our recent notice of the reopening of S. Leonard's Chuuch, Broad Blunsdon, Wilts, we omitted to state that the restoration was carried out under the direction of Mr. Butterfield.

SURVEYORS TO LOCAL BOARDS.

IN consequence of the attention now paid, sometimes voluntarily, but we regret to say, more often, compulsorily, to sanitary measures and hygienic principles, the duties devolving upon municipal authorities and local boards have of late years been considerably augmented. It has become indispensably incumbent upon them to, first of all, recognise the responsibility that has become attached to them as guardians of the public health; secondly, to devise means for demonstrating their sense of that responsibility; and, thirdly, to carry these means into practical execution. Slow to do the first, they are still slower to effect the second, and it is a miracle that the third is ever accomplished at all. Yet of all these, the first is unquestionably the most difficult step to surmount. Many people will from a natural apathy and indolence of disposition, shirk most persistently duties and responsibilities which they ought to undertake readily and energetically. There is another reason which deters persons from discharging the duties of either their public or private positions. It is that if they once acknowledge their liability, they are bound in a conscientious point of view to satisfy the claims incurred thereby. Otherwise they stand in the position of people who sin with their eyes open, and to whom the classic motto may be applied—"*Video meliora, proboque, deteriora sequor.*" So far as the recognition of sanitary measures is concerned, it may be said to be universal. No one would attempt to deny that every city, town, and village should be provided with an adequate system of drainage and sewerage. A difference of opinion may and does prevail respecting the best system that can be adopted, but it is admitted by all that the fundamental principles do not vary whatever may be the system advocated. These are the rapid and effectual removal of the sewage from the habitations of men, and its subsequent utilisation as a fertilising medium for the ground. In order to carry out the works inseparable from the adoption of a regular plan of drainage and sewerage, it became necessary for local boards to employ a professional man of somewhat higher attainments and capabilities than distinguished the older specimens of the ordinary road surveyor. Many towns have always had their surveyors, but a vast number recently came for the first time under the provisions of the Local Government Act, and thus there were numerous vacancies for appointments of this decription. Let us examine a little into their nature, the duties and responsibilities connected with the situation, and the renumeration attending it.

The manner in which these appointments are filled up is pretty well known. The Local Board advertises in some half-dozen of the most influential scientific and professional journals for a surveyor, and appoints a certain day by which the applications are to be sent in. These are opened and considered at the next Board meeting, the chaff sifted from the wheat, and a selection made of five or six of the candidates who have either the most merit, or the most interest with the members, and who are requested to attend personally before the Board on a subsequent occasion. On presenting themselves, they are individually paraded for inspection before the assembled members, who, in common language, "take stock" of them. A few questions are addressed to each, touching generally upon their previous experience in Local Board work, and they make their bow and retire. The fortunate candidate is ultimately determined by voting or balloting, and the affair terminates. The man who has the most interest gets the appointment, we hear our readers say, and no doubt they are correct in their surmise. At the same time, a totally incompetent man would find it extremely difficult, with all the interest possible, to succeed, as, however low it may be, there is still some standard of qualification adhered to. It would perhaps save much disappointment and jealousy if intending candidates would bear in mind that there is not the slightest use in the world "going in" for these appointments unless they possess some little interest at head-quarters. The best qualification with respect to experience and ability that any man could have will avail nothing unless backed up by a friend at court. There is nothing particularly to object to in this arrangement. If the successful candidate is not the best man out of the whole, at any rate he is rarely the worst. As a rule, the boards select as good men as they can get for the money, and frequently they get much better officers than they deserve, considering the miserable remuneration offered. A word or two will be said about this as we proceed, and the reason given why, in some few instances, very superior men, having accepted the appointments, remain in so very an inferior position. The duties of the surveyor to a local board may be summed up in a very few words. He is responsible to the board for everything connected with the ways and works of the town and district to which he is appointed, and if the district be new, that is, only recently made amenable to the Act, and drainage and other works are in progress, it is no idle statement to affirm that the whole of his time must be devoted to his duties, supposing, as we now do, that there is no assistant surveyor employed. Unless the town be very large, one officer of this description is considered sufficient—by the ratepayers at all events. The duties falling to the lot of the surveyor may be classed under two subdivisions. The first of these includes what may be correctly termed routine work, which is pretty constant in its nature, but generally has a tendency to increase year by year. This comprises the periodical inspection of the whole district, preparing reports, attending meetings of the Board, drawing up estimates, looking after the roads, drainage, and office-work in general. The other description of duty is of a different character and comprises the designing and superintending of any new works, such as those relating to the drainage, sewerage, or water supply of the district. When these are once constructed, their future maintenance bring them under the category of those included under the head of routine.

In connection with this subdivision of a surveyor's duties, there is a very important point to be taken into consideration, and one respecting which great diversity of opinion prevails. It is, Should a surveyor be permitted by his Local Board to take private practice? Much may be said for and against the permission. If there are important works in progress throughout the parish, there is no question but that the surveyor, unless he be provided with a deputy or competent assistant, has not any time to bestow upon private practice. But on the other hand, where these conditions do not prevail, the mere routine work is not sufficient of itself to engross either the time or the ability of an able man, and there is no valid reason why he should not be permitted to benefit others by his professional skill and experience. It must be borne in mind that our remarks do not apply to surveyors in large towns, where there are one or two assistants employed, and where the conditions are very different, but to those of a moderate size, which constitute by far the greater number of vacancies of this description. Provided a man does his duty to his employers, it is nothing to them what portion of his time is occupied in fulfilling that duty. The question of a professional man holding an appointment and taking private practice is reduced simply to one of overtime. Any artisan, mechanic, or common labourer, after doing his day's work, is free to employ the rest of his time as he pleases. Industrious men can often make a good deal of money by "working overtime," as it is called. Is a professional man to be denied this privilege? After doing his duty, which occupies a certain number of hours, is he not to be free to "work overtime" also if he pleases? There is only one argument which a local board could, with common justice, bring forward against this view of the case. It would be "We give you a liberal salary in order that you may be able to live respectably, without depending upon private practice." Unfortunately this is the very last argument that can be adduced. The maximum salary offered for the appointments under notice rarely exceeds £150 per annum. It might be asked, what kind of a person do local authorities expect to get for so miserable a stipend? They cannot expect to get gentlemen, or *bona fide* professional men. It is, in fact, scarcely enough pay to induce a good foreman to accept the situation, as many of that class earn their four pounds a week regularly and constantly. Is it any wonder that eminent engineers have to be called in frequently to set right errors and blunders that could not possibly have occurred in works which had been carried out by really able and competent men?

It has been stated that, notwithstanding the wretchedly low remuneration offered to local board surveyors, there are some good men amongst them, although these are the exceptions. There are many reasons which conduce to this result. In the first place, there has been for some years, and there is at present, a lamentable dearth of employment in the surveying and engineering line. There has been literally no work to be done at home and comparatively little abroad. The only opening of any kind, however poor, has been in drainage and sewerage works, and it is idle to suppose that the low salaries offered by local authorities are not very good evidence of the fact being widely known. Moreover, some men of experience and undoubted professional ability occasionally accept these appointments, on the chance of taking private practice, and also of eking out their small incomes by instructing pupils. This last mentioned source of adding to that which is so small as almost to be called a negative quantity, is not denied to them. While on the subject, it should be stated that some of these appointments on a higher scale, which are connected with our large cities, are unquestionably in every sense good appointments, and well worth acceptance. But these are few and far between, and moreover are restricted to a much narrower scope than those to which we have drawn attention. With respect to the latter, one thing is perfectly certain. Irrespectively of all adventitious aid or supplementary additions to the private purse, it is incontestable that no man—we will not say gentleman—with a family could possibly exist in the position of surveyor to a local board on an income of £150 per annum. As the board's officer he is liable at any time to be called upon to give evidence in inquiries instituted by the Local Government Act Office, or before Parliamentary Committees, and in such cases his "personnel" is by no means a matter of indifference. In cross-questioning a witness, a clever lawyer knows perfectly well how to make a distinction, and the style of interrogatories he adopts, and the manner of propounding them, may be said to be in the inverse ratio of the witnesses' social rank and educational status. The failure of one or two schemes fostered by local boards, may be traced to their neglect of the old motto, "Penny wise and pound foolish."

◆

The International Exhibition, notwithstanding the disturbed state of the Continent, will certainly be held next year at Kensington. Numerous promises of support continue to be received by the Commissioners from Belgium and Germany, and even the French Government have completed the annexe which they have erected at a cost of £7,000 or £8,000. From our own country the preliminary applications for space are most encouraging, and the fine arts galleries will certainly, come what may, be well filled. Manufacturers of objects which can fairly be claimed as art productions, such as furniture, pottery, and glass, must apply for space not later than the end of this month

The Surveyor.

THE RATING OF RAILWAYS.

(*Continued from page* 418.)

HAVING thus ascertained the gross receipts in the parish, the next step is to allocate to those receipts a proper share of the working expenses.

First in order is—

Maintenance of Way.—In this particular item the question to be determined is what expense, on an average of years, will keep the subject of assessment at the value which is the measure of that assessment. This usually admits of an easily-ascertained mileage charge, and, on it, as a rule, no great controversy arises.

Locomotive Expenses.—The deductions under this head are measured by the number of miles traversed by engines in the parish.

Carriage and Waggon Expenses.—These must be apportioned according to the number of carriage and waggon miles. It may be necessary to explain that the expression *carriage mile* applies to every mile run by a single carriage or waggon. A train consisting of one engine and ten carriages makes, upon every mile of its journey, one engine and ten carriage miles. Much confusion sometimes arises from the want of a clear understanding on this point. An engine running without a train makes an *engine mile*, but that is called light running. A *train mile* may comprise one engine mile or two engine miles, according as there may be one or two engines attached to the train, and it may comprise any number of carriage miles, limited only by the number of carriages which can be drawn by the engines. If the price per carriage mile can be deduced from the company's accounts, so much the better: but the sum of a farthing per carriage mile will be found in the South of England to be a very close approximation to the actual cost.

Traffic Expenses and General Charges.—Unlike the three former items of deduction, this is general, having no more connection with, or influence on one part of the line than on another. It is incurred for the sake of the whole line, and contributes to the profits everywhere. It is, therefore, usual to divide these expenses in proportion to the gross receipts.

Government Duty.—This being a charge upon certain classes of revenue, it admits of a very easy apportionment, according to the amount of such revenue.

Tithe Rent-Charge.—This may be allowed at its apportioned sum.

Rates and Taxes.—The deduction under this head must be calculated on the rateable value of the railway as deduced by the valuation, at the number of shillings in the pound to which the rates in the parish may amount.

The above items of deduction having been taken from gross receipts, the balance remaining would be the net receipts due to the parish if the rateable value of the whole concern had simply to be divided among the several parishes in proportion to the length of railway and the parochial earnings in each parish. But here it must be borne in mind that the entire works consist of two parts. Firstly, the *line of railway*, directly producing profit; and, secondly, the *stations* (including station buildings and sidings) indirectly conducing to such profit.

The *stations* being rateable in the several parishes in which they are situated, the aggregate rateable value of the whole of them must be deducted from the rateable value of the entire undertaking whenever it is necessary to determine the rateable value of the line only; and, as every part of the railway derives an indirect benefit from the use of the stations, a proportionate deduction must be made in respect of stations from the net receipts due to each separate parish, whether such parish has a station within it or not.

The use of the stations being, as nearly as it is possible to determine it, in proportion to the amount of gross receipts, the deduction in this respect is always made in the proportion which the gross receipts due to a separate parish bear to the gross receipts of the entire undertaking.

The mode in which the *rateable value of the stations* should be ascertained was judicially decided in *The North Staffordshire case.* The parish officers of *Ruston Spencer* in that case contended that the deduction to be allowed in respect of the stations, buildings, and sidings along the line of railway ought to be ascertained by taking the proper rateable value of the land occupied by them as enhanced by their construction; the true rateable value at which the stations ought to be assessed, and not that at which they may be actually assessed, being the true standard of rateability. The appellants contended that they were entitled to deduct six per cent. upon the actual cost of original construction, in the absence of proof that such cost was excessive.

The Court decided that the deduction must be calculated upon the actual value at which they ought to be assessed, and not on the original cost of construction.

The *occupier's share* of the net receipts is determined in each parish, on the same principles as those already explained as applicable to the entire system of railway.

The amount of *tenant's capital* due to each parish is generally in proportion to the gross receipts in the parish, as compared with the gross receipts of the entire system; but to this there are sometimes expceptions, which must be dealt with according to circumstances when they arise.

The *renewal of way and works* is estimated in the same manner in the case of a parish as in that of the whole system. The cost of the materials and labour required for the renewal is estimated, and such an annual sinking fund is allowed as will provide the required sum at the estimated period of decay.

An outline valuation, by way of illustration, is appended to the Paper.

The subject would not be exhausted if reference were not made to the question of "*contributive value*," notwithstanding the decision in the case of *The Great Eastern Railway Company and Haughley*, which has probably set at rest this question for some time to come.

The advocates of "contributive value" contended, that although a branch railway might be so unprofitable as to possess no rateable value *per se*, yet still it might, by its capacity to feed a main line, be worth a rental at the hands of the proprietors of the main line quite irrespective of its local value, and that such a rental as they might be reasonably expected to give would be the measure of rateable value of the branch railway, divisible among the parishes through which it passed.

Of course any such assumed value on the branch would have to be deducted from the value of the main line, because, as already explained, the aggregate value of the several parts cannot exceed the value of the whole.

Practical men experienced much difficulty in dealing with the matter, and the frequent transactions by companies in which branch lines, said to possess no value in themselves, were purchased for large considerations, did not in any way tend to diminish the difficulty.

Such lines of railway may be compared with accommodation land. Take by way of illustration a piece of meadow land, the property of a separate owner, situated in the centre of a gentleman's estate, and within sight of his drawing room windows. For such a piece of land a person would be willing to pay a much higher rent than its ordinary annual value would justify; or, if he could acquire the fee simple, he might be reasonably expected to give a larger price for it than any one else would give, for the purpose of preventing a nuisance which might militate against the enjoyment of his adjoining property, and would certainly depreciate its value. But assume the time has come when he has been able to purchase the land, has grubbed the hedges, and thrown it into the adjoining land, so that the whole has become one estate, it possesses then no element of value, beyond that which it shares in common with the land of which it has then become a part.

This was the case with the railways. Take as an illustration a branch line of small value *per se*, but a separate property. From it two separate main lines of railway compete for the traffic to London.

It is not unreasonable to suppose that the proprietors of either of the main lines would give for the branch more than its proper value *per se*, because, by its acquisition, they would secure not only the local traffic, but also the traffic to London, inasmuch as a traveller would not change carriages for the mere purpose of travelling on the rival line, if he could be carried through without change; and thus the company possessing the branch would control the traffic thereon to its destination. But so soon as the branch has become the same property as one of the main lines, it may be urged that it does not feed the main line any more than the main line feeds it.

In the *Haughley case* the respondents placed their case upon the ground that, in respect of the traffic which passed over *Haughley*, as well as other parts of the line, each mile of the railway over which the traffic passed must be regarded as contributing equally to the earnings of the profits derived from that traffic; in other words, that if the same traffic is carried at a much greater profit over one part of the line than over another, still each part of the line must be considered as equally earning the profit.

The judges said, "the first question presented to us is, whether in assessing the railway in the parish of Haughley, the traffic beyond Haughley is to be taken into account with a view to reduce the expenditure of the line in the parish of Haughley; for, of course, the lower the expenditure can be reduced, the larger will be the amount of property in Haughley, and therefore the greater the rateable value of the line in that parish. It is correctly stated that beyond Haughley, on the route to London, a great accession of traffic takes place, and that the carriages which start from Norwich with a limited number of passengers, are, before they arrive in London, filled with a large accession. It is said that the effect of this additional traffic is to reduce the rate of expenses with reference to each individual traveller; and that, therefore, taking the case of those individuals who have started from Norwich, it is not the expense of carrying those passengers through the parish of Haughley for which the estimated expenditure is to be made, but all the other passengers that join the railway and occupy carriages after the train has proceeded on must be also taken into account. It is a very ingenious mode of putting the argument, but there is a plain and palpable fallacy in it. Take the coach from Norwich to London: the expense of running it from Norwich to London was so much per mile, with little or no variation throughout the journey; so it is, upon an average, the same with a railway. Sometimes the coach carried five passengers, and sometimes fifteen. If it carried five it probably worked at a loss, and if it carried fifteen, it worked at a profit, but the expenses were the same. So it is with the railway. The question to be answered, according to the authorities, is, what is the rateable value in each parish throughout the line of railway which passes over a great number of parishes? That is made up of these two elements, the actual earnings in the parish attributed to the parish, and the actual expenses attributed to the parish. On the simple ground that the actual profit earned is much greater in some parishes than it is in others, the rateable value in those parishes is greater than it is in others. It appears from all the cases that a railway is rateable in the parish where the particular profits are earned; it matters not where they are received. It is so laid down in several cases, and particularly in the case of *Rex. v. Kingswinford*, and *Reg. v. London and South Western Railway Company*. So again in *Rex. v. Lower Mitton* it is laid down that, if a portion of a canal in one parish is more productive than portions in other parishes, either because there is more traffic, or because the yearly outgoings and expenses there are less, it ought to be assessed at a higher proportionate value; and it is decided in *Reg. v. London, Brighton, and South Coast Railway Company* that the value which the land occupied in each parish produces, after the due allowances, is that upon which the occupier is to be rated in each. The learned arbitrator has ascertained what the actual gross receipts were in the parish, and then he makes certain deductions from them, and after those deductions he arrives at what is the net annual value in the parish of Haughley. No better mode of ascertaing that annual value has been suggested, and none which would not involve greater difficulty, or lead to greater inconvenience and greater probable injustice, than the one which the learned arbitrator has adopted."

(*To be concluded next week.*)

SILICEOUS PAINTING.

ON Monday evening last Mr. F. S. Barff, F.C.S., delivered the fifth and last of his course of Cantor Lectures on "Artists' Colours and Pigments," in the hall of the Society of Arts, John-street, Adelphi. As at all the previous lectures there was a large and influential attendance. The chief topic upon which the lecturer dwelt was siliceous painting, and to that, with a very brief explanation of the composition of silicates, this report must be confined. He first showed that silicon existed in both a crystalline and an amorphous form. The general character of silicates was that most of them were fusible. They were, however, of two kinds—viz., those which would dissolve, and those which would not. Mr. Ransome had adopted a method of making soluble silicates, but these included in their composition sulphate of soda, which had a most deleterious effect on siliceous painting. The best way to make silicates of soda and potash was by fusion in a reverbatory furnace. When cold from the furnace, they should be put into open vessels containing water, when an oily liquid was formed. In a dry state the silicate of potash was less coloured than that of soda. He believed that the colour in these silicates was due to organic matter. Having shown specimens of these two silicates, he next exhibited a third of a more purified kind, prepared for the artist's use by Mr. Romney, of Ardwick, near Manchester. Like the two first specimens, this also had originally a dark colour, but on being allowed to stand in a large vat, colouring matter gradually subsided, so that in the space of two or three months it became so clear that the liquid might be drawn off from the upper part of the vessel containing it. Even in this state the liquid was not in a sufficient state of preparation to constitute it a satisfactory painting material. It was too alkaline—there was too much potash present. Mr. Barff then went on to say that before silicate of potash could be used with success in siliceous painting, it was necessary to charge it as much as possible with silica. This could be obtained in the form of a white powder; and to get it in this state in the best way was by the formation of the gaseous fluoride of silicon and water. He incidentally remarked that silicate of soda might be made very beneficial in saturating the wood of which houses were made, in which case fires would be of less frequent occurrence than they were now. From this stage the lecturer entered more fully into the subject of siliceous painting as originally discovered by Dr. Fuchs, and as practised lately in various parts. It was found that when soluble silicates were mixed with carbonate of lime they formed a hard mass, which gave the idea that this hard mass might be tinged with colour. In striving to do this Dr. Fuchs first used silicate of potash, charged with as much silica as it could possibly hold. Then he used silicate of soda, but this did not seem to be so active in its fusion as the former. Then he used them mixed, calling them a "double silicate," that is, a silicate of soda and of potash. These he mixed in two ways, first by mixing the materials of which they were composed and fusing them, and in the next place he used a preparation which he called "fixing solution," and which had more alkali than the other. In siliceous painting it was necessary that the artist should have the silicate penetrate as far as possible, in order to combine all the ingredients of which the painting ground was composed, and a silicate of soda had this property. The first point in siliceous painting was to have a well-prepared ground, and this was also most important in fresco painting. In fresco painting the artist had to use a considerable amount of lime in making his painting ground firm, hard, and enduring, because he had to depend upon the slow action of the lime dissolving some of the sand, and thereby forming a silicate of lime, for the hardening process and durability of his wall. Of course the action of the atmosphere had a great deal to do with this, as he had explained on the previous Monday; but in siliceous painting the artist had to use a bonding material which would hold together the substances which composed his wall. In preparing a wall for siliceous painting he must first see that his wall was dry. But supposing there was moisture on the wall on which he was about to paint, by what means could it be removed? If he mixed silica, alumina, and potash with some carbonate of lime, and coated the wall with that, and then when dry coated it again till it was saturated, then he would have a wall which would resist from without the entrance of damp. This plan was efficacious even if the siliceous painting had to be performed in an exposed situation. The ground should, of course, be prepared with good mortar, (lime and sand) so that there should be left no cracks, and it must also be allowed to be acted upon by the carbonic acid of the air for several months before it was fit for use in this way. In order to render the wall porous a quantity of sand should be used—not rounded but angular sand. When the wall had been thus prepared and allowed to dry, it should be saturated once or twice with a solution of silicate of potash, or better still, with the double silicate before described, having a specific gravity of 1·2. The artist would then find a sort of skin come over the wall, which would prevent the further penetration of silicates, and it was necessary that he should be particularly careful to get rid of this. Various processes were recommended to Dr. Fuchs for getting rid of this, and amongst them was one of scraping, but this he objected to on the ground that it would leave holes in the wall. It could be removed, however, by the application of a solution of phosphoric acid. After all this there came the most delicate process of all, which was to fix on the painting ground, which should not be more than the eighth of an inch thick. Dr. Fuchs recommended the tenth of an inch, but certainly it should not be more than an eighth. It should be composed of sand and lime, but there must be less lime than that used in making the preparatory ground. All the artist wanted was sufficient lime to hold the sand together while it was being put upon the wall, and when this was sufficient it should be saturated again. If he should get too much silica on the surface he should apply heat, which could be done by giving the wall a coating of alcohol and setting it on fire. In this way the particles contracted, and spaces were allowed for the silicate to penetrate. When the wall was in this state it was ready for painting. As to the method of transferring a cartoon, the artist could not adopt the system used in fresco painting. He might adopt any method he thought proper, but he (Mr. Barff) might be allowed to mention that the plan he followed was to rub the back of the cartoon with powdered charcoal, and then trace it upon the wall. In preparing colours for siliceous painting the method was to prepare them in the same way as for fresco painting. Before painting the artist must moisten the wall, and then go on painting his subject with colour that was simply held in solution by water. It was obvious that when this water became dry, the colour would lie in a finely-powdered state upon the walls of the painting ground, and might be easily removed. The way the colours were fixed was by means of a fine spray of silica, thrown upon the wall by a syringe made for the purpose. This spray should be thrown on till the wall was fairly damp, and it should be repeated after drying, until the colours could not be removed. After some time the painting should be examined, to see whether the silicate had gone in, and left some of the colours imperfectly bonded. If this were so, the operation with the syringe should be repeated. There was no doubt, from experience in this country, at Berlin, and elsewhere, that paintings executed in this way were wonderfully durable. But there was a difficulty which he had found and felt bound to name. The artist, as his hearers were aware, was putting in an alkali of silicate, and there must be some alkali of silicate to come out in some form or other, which must in its consequences tend to injure the beauty of the painting, if not to disintegrate its surface. In experiments which he had made, such a result had come about, and in course of time some of the colours had been covered with a mildewy appearance, owing to the salts formed by the carbonic acid gas of the air. In saying this, he said he must not by any means be understood as intending to under-rate this system of painting, for he entertained the highest feelings of admiration for the gentleman who invented it, but their object that evening was to ascertain the best means of doing certain things, and having conceived a method of his own, he put it forward, with the simple desire that it should stand upon its own merits, and should not detract from those possessed by other methods. He, however, would go so far as to assert that his method was theoretically a better one, and he believed it would be found to be so practically. Siliceous painting was said to be the best of the permanent methods for mural and monumental decorations. After some further remarks, Mr. Barff said that the alumina on being fused with potash formed a compound, just as silica did when fused with potash. In the one case, an aluminate of potash was obtained, and in the other, a silicate of potash. When the silicate of potash and the silicate of alumina were mixed, they became, in the concentrated forms, gelatinous; but if they were mixed in a diluted state they were not gelatinous. At eleven o'clock that morning he had mixed the two, and at five o'clock they began to gelatinise. This was a vehicle for painting, which might be used with colours, and the advantage of this process was that there was no appreciable quantity of alkali. By using these materials, he had never known coloured surfaces to become mildewed in the slightest degree. If artists used silicate of potash and aluminate of potash, they would get a firmer, harder, and more enduring painting-ground than they would by using the silicates alone. Colours to be used in siliceous painting should be impregnated with silicates. If siliceous painting should find favour in the eyes of artists, he had no doubt that there were many persons who would make it their study to prepare suitable colours in the best possible way. Both siliceous and fresco painting were very durable when properly executed, and he very much desired to see these methods introduced into this country for the decoration of our public buildings. He particularly did so on behalf of the poorer classes, who, he contended, had far too few opportunities of seeing works of art. In conclusion, the lecturer expressed the hope that he had implanted in the minds of his hearers a desire to increase their knowledge of chemical and physical science in connection with the noble profession to which their lives were devoted.

Mr. P. LE NEVE FOSTER moved a vote of thanks to Mr. Barff, and observed that that gentleman's lectures had combined the science of the chemist with the practical skill of the artist.

The motion was carried unanimously.

We understand that next session Mr. Barff will deliver a course of lectures on Ceramic Painting.

◆

The New Court Theatre, Sloane-square, Chelsea, will open on the 21st of January next.

PATRICK MCDOWELL, R.A.

ONLY three weeks ago we announced to our readers the retirement of Mr. McDowell from the Royal Academy on account of ill-health, and we now regret to have to record his death, which occurred on the 9th inst., at the age of 71. He was born at Belfast, on the 12th of August, 1799; his father died while he was an infant, leaving his mother with very limited means. His first schooling was with Mr. Gordon, an engraver, who encouraged the boy's fondness for art. At 12 he came to England, and after spending two years with a clergyman in Hampshire, he was apprenticed to a coachmaker in London. His master four years after became bankrupt, and young McDowell then took lodgings in the house of a French sculptor, M. Chenu, where he continued his art proclivities for sketching and modelling, and in 1830 became a student of the Royal Academy. Though a successful competitor for the public monument to Major Cartwright, as the work was not carried out for want of funds he lost this chance of becoming known, but the friends of the deceased Major became his patrons, and obtained for him many commissions. In 1837, a work he exhibited in Trafalgar-square, "A Girl Reading," attracted the notice of Sir J. Emerson Tennent, who in conjunction with Mr. W. T. Beaumont, became from that time his most liberal friend and patron. In 1841 he was elected an Associate, and in 1846 a full member of the Royal Academy. Among his more important works we may mention, "A Girl at Prayer," executed after his return from Rome in 1842; "Love Triumphant," exhibited in 1844; "Early Sorrow," and "Virginius and His Daughter," in 1847; "Psyche," in 1850; "Love in Idleness," in 1852, and a most graceful statue of the young Earl of Belfast in 1856. His bronze statues of "Waryn Earl of Pembroke," and "Almeric," and the marble one of William Pitt, adorn the Houses of Parliament. His last great work, the group of "Europe" for the south-west angle of the Albert Memorial, has been but just erected on its pedestal. His death, we regret to say, took place before he had seen his work in its final position. The elevated and graceful refinement of all his works, and his complete power over his materials, is most remarkable when we consider that he was self-taught. He excelled, we think, in his impersonation of female beauty, for he sacrificed too often the vigour and expression of the male form to an excessive and laboured softness and finish. Among his brother artists he was universally respected, and to his immediate friends and acquaintances his unvarying courtesy and kindness especially endeared him.

◆

ARCHITECTURAL AND ARCHÆOLOGICAL SOCIETIES.

EDINBURGH ARCHITECTURAL ASSOCIATION.—The usual fortnightly meeting of this Association was held on Wednesday week. Mr. R. Morham, jun., president, in the chair. A paper was read by Mr. C. W. Somerville, entitled "A Comparison between a Modern and a Mediæval City." After giving a brief historical *resume* of the principal architectural features of the Old Town of Edinburgh, he spoke of the New Town as characterised by dull monotony of design, and contrasted with this the effect that would have been produced by a little more irregularity of outline. The paper was much discussed.

LIVERPOOL ARCHITECTURAL SOCIETY.—At the usual meeting of the Architectural and Archæological Society, held on Wednesday week, in the Royal Institution, Colquitt-street, the chair was taken by Mr. Vale. Mr. Joseph Boult gave an address on "Street Improvements, retrospective and prospective." The condition of parks, he thought, was a question which need not at present be considered, as those parks were not yet completed, and they had no opportunity of judging of the effect. The subject of street improvements had excited attention for some time past, and a committee of that society, appointed in 1852, had considered the matter, and presented a report containing their ideas upon the subject. In the following year another committee was appointed at a town's meeting. No fewer than twenty-nine specific schemes were brought before that committee, of which Mr. Boult was a member, and the plan of a circular boulevard round the town was suggested, and became a favourite project. At that time the land proposed to be used was vacant, but now was covered with dwellings, which showed the importance of carrying out any necessary street improvements at once. Mr. Boult called attention to the geometrical position of the streets in London as proposed by Sir Christopher Wren, but never carried out. The project of the Architectural Society in 1852 was to have a communication from the south end of S. George's Hall to the south end of Moorfields, with a branch to North John-street. Mr. Boult described on the map the various improvements which had been suggested, and those which had been carried out. Mr. Boult referred to the improvements at present under consideration, and suggested many which would prove of great convenience to the traffic, especially at the south end of the town; and referred to the possibility of an esplanade along the banks of the river.—A discussion ensued on the merits of the various proposals and the projects which had been put forward; and a vote of thanks having been accorded to Mr. Boult, the meeting terminated.

Building Intelligence.

CHURCHES AND CHAPELS.

BATLEY.—A new Catholic chapel was opened at Batley, on the 15th inst. It is built in the style of the thirteenth century, and comprises a nave, with entrance porch, and semi-octagonal baptistry, north and south transepts, chancel terminating with a polygonal apse, and having a chapel on each side and a spacious sacristy. In the south transept is the organ and choir gallery. The church will seat 650 persons, and has cost £2,374., It is built from designs by Messrs. Adams & Kelly, of Leeds.

CHADLINGTON.—The parish church of Chadlington, Gloucestershire, was reopened on Tuesday week after restoration. The whole of the south side of the church has been rebuilt, and a vestry and an organ-chamber added to the original. On the north side of the nave the columns have been underpinned, to give them additional strength, and like support has been given to the north wall. A new belfry has been erected. The whole of the roof has been completely renovated. In the chancel two new windows have been added, the fittings completely changed, and an ecclesiastical design in coloured tiles laid in the floor.

CHELTENHAM. — The new apse of S. John's Church, Cheltenham, was consecrated on Tuesday week. It affords accommodation for 150 additional worshippers. Messrs. Dancey Brothers, of Gloucester, are the builders, and Mr. Muller the architect. The whole of the wood and stone carving has been done by Mr. Boulton, of Cheltenham.

OSNEY.—The foundation stone of a new church at Osney was laid on the 13th inst. The erection of the church, which will be dedicated to S. Frideswide, has been undertaken by Messrs. Honor & Castle, at the contract price of £2,990, and the architect is Mr. S. S. Teulon. The church will be built to accommodate 370 people, its interior length being 105ft., and the width of the nave 25ft., and the transept 18ft. 6in. The depth of the chancel, which will be lighted by 15 windows, is 11ft. 6in. Besides these there will be 12 windows in other parts of the church (nine in the nave and three in the north transept). The tower will be 54ft. high, and the spire 40ft. The walls are to be built of local stone, with Bath stone dressings, and the roof Staffordshire tiles; the seating and roofing inside of deal, oiled and varnished. Mr. H. Howes is the clerk of the works.

WORKSOP.—A new reredos has been erected in the church of S. John, Worksop. The memorial (for such it is) surrounds three sides of the chancel, consisting of a reredos and an arcade of sixteen panels. The arches of the latter are moulded and filled with polished Sicilian marble. The space below has been filled with geometrical mosaic tiles. The reredos is formed of three effectively moulded arches, cusped and supported on shafts of Belgian marble. The panels are of figured Derbyshire alabaster. The reredos terminates in a crocketed gable, in the centre of which is a carved trefoil panel. The memorial is Early English, in character with the style of the church, and has been designed and carried out under the superintendence of Mr. T. Smith, of the firm of Messrs. E. & T. Smith, Sheffield.

BUILDINGS.

LEAMINGTON.—On Monday last the new boarding-house which forms the western side of the quadrangle of the College at Binswood was inaugurated. The boarding-house has the residence of a master attached to it. The basement and ground-floor contain various requisite offices, also a spacious dining-hall, a schoolroom, as well as several private studies. The upper floors contain forty dormitories, bath-rooms, and other apartments; also separate rooms for invalids. The whole is well heated with hot water and thoroughly ventilated. The staircases are of stone. No expense has been spared to insure health and comfort in the minutest particulars.

THE NEW GENERAL POST-OFFICE.—On Friday last the chief corner stone of the New General Post-office, at the corner of Newgate-street and S. Martin's-le-Grand, was laid by the First Commissioner of Works (Mr. Aryton, M.P.). The building will be one of four stories, and it will have a frontage of 286ft. in S. Martin's-le-Grand, and another of 144 in Newgate-street. It will be constructed of Portland stone throughout, the first two stories being ornamented with Doric, and the others with Corinthian pilasters. The principal entrance will be in S. Martin's-le-Grand, facing the present Post-office. In the centre of the building will be a large public office, in which the usual postal business will be transacted. The floors are to be thus appropriated:—Ground floor (besides the large office), the Postmaster-General, and Receiver and Accountant-General's offices; first floor, Secretary's Department; second floor, the Savings Bank Department; the third floor, the Telegraph Department. The basement will be formed into store rooms and offices. The old Post-office will then only be used for the receipt, sorting, and dispatch of letters. The estimated cost of the structure is £129,700, the contractor being Mr. William Brass, and the architect Mr. James Williams, of the Office of Works. The erection is being superintended by Mr. Trickett. It will be finished in 1872.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

TO OUR READERS.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

Letters relating to advertisements and the ordinary business of the Paper should be addressed to the EDITOR, 31, TAVISTOCK STREET, COVENT GARDEN, W.C.

Advertisements for the current week must reach the office not later than 5 p.m on Thursday.

RECEIVED.—R. C., J. T., E. L., W. S., J. H., J. N., R. C. M., T. B., J. N. N., R. W., J. H. J., T. P., W. & S., T. A., J. P. S., G. W., W. W., C. B. A.

THOS. GARRETT.—Your sketch for title for BUILDING NEWS Sketch-Book to hand.

P. AULD.—We should have said Thos. Garrett last week.

B. T. M., J. H. J., J. N., W. G.—Sketches returned.

THOS. POTTER.—The block plan came to hand. Please prepare a drawing.

JAS. HICKS.—The weather has been so unfavourable, in London at all events, for some time, that we have been unable to take any photo-litho. illustrations.

E. L. GARBETT.—Your rousing letter next week.

WINDBAG.—Next week.

C. W. WHITTENBURY.—Sketch returned,

W. CLEMENT WILLIAMS.—Your sketch was returned—not that it was inferior to some which had appeared, but because several other Norman doorways, &c., had appeared. One object we have had in view was to give as much variety as possible.

ERRATUM. — In the last paragraph but one in my letter last week I am made to say "If 'E. L. G.' thinks it was *not* worth preserving." The *not* should be omitted.—G. AITCHISON.

Correspondence.

THE ARCHITECTURAL CLASSES OF THE ROYAL ACADEMY.

(*To the Editor of the* BUILDING NEWS.)

SIR,—In a letter which I addressed to you three weeks ago, I promised to send the particulars of the proposed course of instruction in the architectural classes in the Royal Academy when determined upon by the Council of that body. I am now authorized to state them in general terms, premising at the same time that, as the establishment of this school (the first of its kind in this country) will be necessarily attended by certain difficulties, with which experience alone can make us acquainted, modifications may be introduced where found requisite.

The instructions I forwarded to you referred only to the preliminary drawings to be sent in by each applicant. These, with the certificate mentioned, will be submitted to the Council; if deemed satisfactory, their authors will be admitted as probationers to study in the architectural classes and to attend the lectures on anatomy, painting, sculpture, and architecture. The lectures on perspective will be attended by probationers only when there is sufficient room for them and the students as well.

When admitted to the architectural classes, the probationers will be expected to execute one drawing shaded in Indian ink, one drawing from the cast, and one complete architectural design within the six months, and towards the end of this term to attend at the Academy on two days (to be fixed beforehand); on the first day they will have to execute a design of a subject which will be given at the time, and be of such a nature as to be easily worked out in six hours. On the second day a portion of their design will be drawn to a larger scale, and a time sketch made in three hours of some piece of ornament from the round. All these drawings will be submitted to the Council, and if deemed satisfactory, the probationer will be admitted as a student of the Royal Academy for seven years, and expected to continue his studies. In the event of a probationer not succeeding the first time, he will be allowed to continue his studies as before. The classes will be held on Tuesday, Wednesday, and Friday evenings, from 6 to 8 p.m.

COURSE OF INSTRUCTION.

Probationers.

1. Architectural Drawing.—The delineation of some of the best specimens of antiquity, either Classic or Gothic, first in line drawing, and then shaded in Indian ink in graduated and flat tones.

This is the universal method adopted in France and Germany to acquire care and accuracy in drawing, and power and facility in the use of the brush. Its main object, however, is to enable the students to recognise in a geometrical drawing the relative value of the various projections either of the wings or masses of the building, or of the cornices, string-courses, or other decorative features, without being obliged to have recourse to a perspective drawing.

2. Drawing from the Ornamental Cast.

3. Architectural Design.—A subject will be given out two months or six weeks, and worked out at home; the drawing will be submitted once a week to the master; taken home and altered after his criticism. At the end of the two months or six weeks, finished drawings, not too elaborate, will be brought back and sent in as probationers' work.

Students.

I. Architectural Drawing. — Similar to probationers' work, except that the shading will not be from copies as before, but the geometrical projections of shadows will be taught.

2. Drawing from the Ornamental Cast.—Same as before, except that, as the architect's drawings are only the means of communicating certain forms to the sculptor or carver, they should not be too elaborately finished, but rather, though carefully drawn, rapid and effective.

3. Architectural Design.—As above, but of a higher class. Here, as with probationers' work, text-books will be pointed out to the student, in which he may find the best examples of the particular style of his design. Some of these books will be kept in the architectural room for reference; as, for instance, Stuart & Revett's "Athens," Blouet's "Baths of Caracalla," Brandon's "Analysis of Gothic Architecture," Viollet le Duc's "Dictionnaire Raisonné," Letarouilly's "Rome," and Sauvageot's or Berty's "Renaissance of Francis I.," &c.

As experience may dictate, the following courses will be introduced:—

4. A course of study, consisting of the delineation and projection of vaulting and groining from the early barrel vaults of the Romans, tracing its development through the middle ages down to the sixteenth century.

5. An occasional course, in which designs will have to be worked out in accordance with certain perfected styles.

6. An occasional course, involving the restoration of portions of certain well-known examples of antiquity.

(These two courses, archæological in their tendency, are adopted in France by the professors of the schools there; their object being to instil into the student's mind an academical knowledge of precedent as the best foundation for the acquirements of a knowledge of architectural design.)

7. A course of composition in ornamental designs.

The medals will be awarded as before. These are as follows:—

A Gold Medal and a Scholarship of £25, tenable for two years, for the best architectural design worked out at home.

A Travelling Studentship of the value of £100 for one year, for the best Architectural Design executed in one month in the architectural classroom of the Royal Academy.

A Silver Medal for the best Series of Measured Drawings of some building; and in alternate years, in addition, a Silver Medal with books.

And a Silver Medal for a Perspective Drawing and a Specimen of Sciography.

It is to be hoped that in future the competitors will be more numerous. There was only one competitor for the silver medal for measured drawings this year, and none for the perspective medal. The books of the Academy show during the last seven years that from 25 to 28 per cent. only of the students have ever competed; now, however, that the Academy have placed the architectural students on the same footing as the painter or sculptor, there is no reason why the number of competitors in both classes should not be equalised.—I am, &c.,

R. PHENE SPIERS,
Master of the Architectural School.

BONA FIDE ARCHITECTURE.

SIR,—I have read with much pleasure the excellent article in your last impression but one entitled "Bonâ Fide Architecture;" while I have great respect for the opinion of your contributor "C. B. A.," I trust you will allow me to take exception to some of his conclusions, and to give my reasons for so doing. In making the suggestion he does with reference to architectural exhibitions, and to the action of the Royal Academy in the matter, it appears to me that he overlooks one very important point, namely, that an architect is not judged by his drawings or by what he has in the "voluntary obscurity" of his portfolio, but by the buildings and the finished works which he may have executed. This is the real difficulty against which an architect has to contend in any public exhibition of pictures and drawings, and it is on this account that he is placed on such an unequal footing among his brother-artists. He may employ a painter, it is true, to prepare for him a view of the design he has evolved or the building which he has executed, but it may be, and it most frequently is, a very unsuitable subject for pictorial treatment. Or he may have a carefully-constructed model, with the details and accessories most accurately rendered, but both these modes of placing his work before the public are highly unsatisfactory. In the water-colour drawing he has—in the judgment of the public—to compete with subjects chosen by the artist for himself, suitable, therefore, on account of their very picturesqueness for his pencil, while the recently-erected mansion or public building would rarely be chosen for artistic delineation from the absence of those qualities which in the artist's opinion go to make a picture. Again, if he exhibits a model, the grandeur and proportion of a building, and, indeed, its whole effect, has to be sacrificed in order to bring it within the compass of an ordinary exhibition-room. On this score alone, in fact, all models are more likely to mislead than to instruct. "C. B. A." alludes to the want of sympathy on the part of the public with the architectural perspectives at the Royal Academy. Well, in the Architectural Exhibition at Conduit-street, which did actually give us architects' own drawings, the real work of the architectural draughtsman was equally, and, if possible, still more deserted, both by the public and the profession. I fear that "C. B. A." would find it quite impossible to persuade a body of artists to open a room specially suited not to a general, but to a strictly architectural public purely from didactive motives. He might with much more reason have urged upon the Academy the desirability of opening an exhibition simply for the studies and sketches of artists; for the picture, be it remembered, is to the artist what the executed building is to the architect. Such an exhibition as this might be made not only interesting and attractive to the general public, but also most instructive to all concerned. I fear, however, that until some such "bonâ fide" display of *artists' studies* is undertaken we must not expect the Academy to care for the working drawings of architects. I fail to follow "C. B. A." in the exact drift of his argument in favour of extended exhibiting space for architects. He admits the failure of the Conduit-street Exhibition, which he attributes to the fact of its dry and uninteresting technicality, but I cannot see that on this account the Academy is to carry on the work of the defunct Architectural Exhibition Society, and gild for the public the bitter pill of architecture with the added lustre of its pictures and sculpture. We cannot surely call upon the Academy to give up wall space for works which appeal to such a small section of the public. "C. B. A." must also remember that the eighty-eight drawings, with about half a dozen exceptions, represent the entire number of works sent in last time by the profession for the whole room offered by the Academy authorities to architects, and I can further assure him that in spite of the promise of a splendid gallery and the certainty of a large number of visitors, but few names of architects have been received by Her Majesty's Commissioners for the forthcoming Exhibition of 1871. Under these circumstances the difficulty does not arise from the want of galleries or exhibiting space, but rather, I fear, from the want of drawings and studies to exhibit. Perhaps "C. B. A." and many of your readers will be glad to learn that the members of the Architectural Association (which society was the parent of the Conduit-street Exhibition) have no intention of allowing the annual display of architectural drawings to drop, and that a scheme is now under consideration for carrying on a purely technical exhibition of architects' work either at the Museum in Bowling-street or elsewhere next year. Whenever this exhibition is held, I am convinced that the only difficulty to be overcome will be to persuade architects to lend their drawings for the information and instruction of their younger brethren. A good—shall I say a well-coloured?—architectural perspective is after all only a species of advertisement, and as such is worth producing and exhibiting, but no such inducement exists in the case of a detail drawing, however good. I, for one, shall hail with delight any signs of a disposition on the part of architects to adopt the suggestion of "C. B. A.;" though I am sure in this case space will never have to be begged from the Royal Academy for the purpose. In conclusion, with an apology for troubling you with so long a letter, let me assure "C. B. A." that as he has so well described the amazement of the architect of the Cathedrals of Chartres or Westminster at the attainments of his brethren of the nineteenth century, I may also picture the amusement which his blacklead sketch on a deal board would create when placed side by side with the beautiful and careful drawings of Burges or Waterhouse.—I am, Sir, &c. GILBERT R. REDGRAVE.

Kensington, Dec. 15.

THE AIR AND HEALTH QUESTION.

SIR,—Thanking "E. L. G." for his reply in your paper of the 10th inst., I would observe that to say that "without free ingress below and egress above of equal supplies of pure and impure air respectively an apartment cannot be properly ventilated," and to say that "a lantern fulfils," as regards ventilation, "what a perfect dwelling or meeting room requires," are merely two different expressions of the same *theory*.

But *theories* are nothing without *practice*, and if "E. L. G." will kindly proceed to explain in your columns how a comfortable eight, ten, or twelve-roomed two-story house can be built, which shall have all its rooms as well-ventilated as lanterns are, and at the same time be as convenient and habitable as such houses now are in other respects, he will I am sure greatly oblige many of your readers, especially if he demonstrates that an apartment may be as well ventilated as a lantern, and at the same time kept at a temperature of not less than 60 deg. Fah., by reasonably attainable appliances.

The Briton of average intelligence knows that a perfectly ventilated lantern can be made at a reasonable cost and effective in all other respects, and insists on having it so. Let "E. L. G." convince the public that the same holds good of a house, and architects will have to be as submissive as lampmakers are.—I am, &c. J. G.

ARCHITECTS AND THEIR PLANS.

SIR,—You have exactly hit the nail on the head in your remarks on a client's claim to an architect's plans in your paper headed "The Domestic Architect" (p. 442 of the BUILDING NEWS). As you say, the simple rule, so conformable too to common sense, should be, "Let it be in all cases understood that the original drawings are, of course, the property of the architect, but if a client wishes a set for his own use and satisfaction let him by all means have one, paid for at a moderate rate, or, in some cases, perhaps, even gratuitously given." I am sure that, for one, I would gladly follow so simple and satisfactory a rule of professional practice, and thank you for so easily settling a matter there never should have been any altercation about.—I am, &c.,

Dec. 20. A CITY ARCHITECT.

SCHOOL FOR FIFTY CHILDREN AND RESIDENCE FOR TEACHER FOR £160.

SIR,—There has been built in my parish of Wysall, for the sum of £160, a school for fifty children, with residence for teacher attached, and offices. The dimensions are as follows:—

SCHOOL.—Length, 25ft. 3in.; width, 16ft. inside; wall, 11ft. high; roof, open, 17ft. high. The school contains four windows, 5ft. high by 4ft. wide. There is also porch and chimney. The floor is boarded.

THE HOUSE.—Two lower rooms: Front, 12ft. 6in. by 11ft.; kitchen, 12ft. 6in. by 6ft. 1in.; height, 8ft. Bedrooms: front, 13ft. by 11ft., with recess in addition; back, 9ft. by 8ft.; height, 8ft. 6in. All the outer walls are 14in. thick. There is ample room for pantry under staircase; separate office with dustbin between are to be built. The whole material and workmanship, and proper painting for the above, has been found and done for £160. The parishioners do carting without charge. I am architect and clerk of works, Mr. William Bryans, of Wysall, builder. It is so important to assist parishes to build voluntary schools that for 24 stamps I will send two photographs of building, with printed specifications and instructions.—I am, Sir, JOHN PARKER,
Vicar of Willoughby and Wysall.

"J. B. F." ON SHARP BUILDERS' CLERKS.

SIR,—It is refreshing to read such a piece of magnificent contempt as your correspondent "J. B. F." displays for those "sharp builders' clerks," who, by assuming to themselves the sounding title of architect, have caused the profession to fall into disrepute with the general public. Make, he suggests, the architectural body into a more complete trade-union than it is at present, and we shall then hear no more of those objectionable "clerks" and their wicked practices.

Judging from appearances it would seem that the confiding but victimized public, with whom he sympathises so deeply, has no dislike to the terrible underhanded operations to which it is subjected, as it is a notorious fact—of which your correspondent is not ignorant—that this injured public largely indulges itself continually in employing those ridiculous creatures in preference to the gentlemen who are not ashamed to dub themselves "the salt of the earth," and who endeavour to maintain the lofty pretension that all men, from the common labourer to the painter and sculptor, shall be subject to them.

If I might venture to point out a simple remedy for the disrepute into which it is alleged the profession has fallen, different in every respect to the weighty suggestion of "J. B. F.," it would be that, each member of the profession afflicted with that special architectural malady, conceit, should at once adopt strong measures for ridding himself of the infection, and, if the profession wishes the world to accept them as artists, they should lose no time in descending from their stilts and showing by their works and by a trifle of common sense that they are not unworthy of the coveted honour.—I am, &c.,

READER.

◆

Intercommunication.

◆

QUESTIONS.

[2073] WALNUT TIMBER.—What would be a sufficient time for planks of walnut to season, supposing they were felled this month, and how soon might the timber be used for framed work?—OLD TIME.

[2074] PERCENTAGE OR DECIMAL VALUE.—A and B are doing work to the amount of £20,000. According to the schedule of prices they have supplied about £2,350 worth. I shall feel grateful if some kind reader of the BUILDING NEWS will show me how to arrive at the decimal value of the work executed on the latter amount on the whole contract?—E. C. B.

[2075] TO PRACTICAL CLERKS OF WORKS.—I should obliged for your best opinion with reference to the undermentioned; firstly, as to walls built 2ft. 9in. thick, average 7in. brickwork inside, that is one course of headers and one course of stretchers, old English bond, and 17ft. 6in. in length, and the remainder, and on side face all flint. Please to give me your opinion whether you think it not likely that the flints would settle more than bricks inside and be more liable to draw the work over outside. If it would not be likely to cause the stone quoins to go from the work some ¼in. No dowels, no iron ties, no iron hoop.—AN OLD FOREMAN.

[2076] PAINTING, GRAINING, ETC.—I should feel obliged if you or any of your readers would inform me if I can demand a full statement of dimensions and quantities of the several classes of painting, graining, paperhanging and glazing, also the prices allowed for each particular work, in a job done with the agreement that at the completion it should be measured and valued by an architect or surveyor appointed by the builder, from whom I take the job.—WILLIAM

[2077] FONTS—LEICESTERSHIRE, YORKSHIRE.—Would any one be kind enough to tell me the date of font in Burrow Church, Leicestershire, and Patrington, Yorkshire; also whether Leicestershire contains two good Perpendicular fonts?—J. N., East Gate, Leicester.

REPLIES.

[2065] WATERPROOF ROOF. — In reply to "Triangle," pointing with cement may cure it, but only for a short time; it will be as bad as ever before long. The only way I could suggest, providing the tiles are hung on by nibs or nailed with copper nails, would be to strip them off, laths as well, then nail your laths ½in. nearer each other than before, which gives the tiles an inch more lap. Of course you would require a few more tiles to make out at top.—W. L. K.

[2072] BINDING THE "BUILDING NEWS." — In reply to "F. S.'s" query I beg to inform him that I also bind the BUILDING NEWS, but my binder stitches in the double page illustrations by the left hand edge, and then folds them in such a way as to escape his knife when cutting the edges. There may be a better way of doing it, only this is the best I could think of, and it is certainly preferable to that practised by your correspondent "F. S."—I. M. A.

◆

A BOLTON ARBITRATION CASE: AWARD.

OUR readers will remember that in August last a paragraph appeared referring to an arbitration case in which Mr. Isaac Holden, of Manchester, sat as umpire in a dispute between Messrs. Day & Raby, joiners, of Crown-street, Bolton, and Messrs. Ellis & Hinchliffe, builders, of Manchester, arising out of a contract for the carpenters' and joiners' work for the new County Court buildings in Mawdsley-street. It will be remembered that the amount claimed for extra works by Messrs. Day & Raby was £934. After several meetings, we understand that the case has now been settled by the umpire awarding to the plaintiffs the sum of £14 5s. 10d.; the costs, which we understand amount to about £300, being divided equally between the disputants. Mr. James Lomax, surveyor, of Bolton, was arbitrator for Messrs. Day & Raby; and Mr. Thomas Taylor, surveyor, of Manchester, for Messrs. Ellis & Hinchliffe.

◆

STAINED GLASS.

MANCHESTER.—The interior of Christ Church, Moss Side, has been enriched by the insertion of two sets of memorial windows, which fill the lights of both transepts. The three lights in the south transept form one monument, comprising groups emblematical of the three graces—Faith, Hope, and Charity; and those in the north transept are separate monuments, being scriptural representations of Affection, Belief, and Obedience, as illustrated by leading scenes in the lives of Ruth and Naomi, Mary of Bethany, and the Virgin Mary. The designs are by Mr. Linklater, of the firm of Messrs. Price & Linklater, architects, and the work has been executed in this city by the Messrs. Edmundson.

YORK.—Within the past few days the Minster and S. Mary's Church have had valuable additions of stained glass windows made to them. In S. Mary's Church, one of the windows in the south aisle of the nave has been filled in by Mr. Thos. Shepherd, solicitor, of York, to the memory of his parents. In the Minster, the window in the west face of the south tower has been filled in by subscription to commemorate John T. Cleaver, son of Mr. George Cleaver. Mr. Shepherd's window, is in three lights, each of which contains Scriptural subjects. The Cleaver window describes a scene well-known to readers of early Church history—namely, the Market-place in Rome, where Gregory, afterwards S. Gregory the Great, is compassionating British youths there offered for sale. Messrs. Hardman, of Birmingham, supplied both the windows.

◆

LAND AND BUILDING SOCIETIES.

YORK PERMANENT BUILDING AND INVESTMENT SOCIETY.—On Thursday week the annual meeting of the members of this society was held at York. The directors refer with satisfaction to the operation of the society during the past year. There has been an active demand for advances on shares, as is shown by the amount so employed—£20,730—which is considerably in excess of any previous year. The number of shares entered is 373½; and those which have either matured, been cancelled for advances, or withdrawn, amount to 135½. The nett premiums renewed amount to £218 7s. The receipts to the credit of management contingent fund are £487 4s. 6d.; exceeding the expenses of management by £257 13s. 10d.; from this sum £85 15s. 10d. will be transferred to the reserve guarantee fund. It is satisfactory to observe the balances on these two accounts are £231 18s. 7d. in excess of those of last year. The directors propose to continue the bonus of £1 5s. on each share which matures during the next year.

◆

LEGAL INTELLIGENCE.

LAMBETH COUNTY COURT.—IMPORTANT TO BUILDERS.—KIMBER v. HONOUR.—This was a case tried at the above court, in which the plaintiff sought to recover the sum of £3 12s., balance for work done. The plaintiff, a plasterer, on examination, through his solicitor, declared the work had been done to a new billiard-room to the "Perseverance" Tavern, in Vassall-road, Brixton, and was for plasterer's work done by day work. His account was £12 16s., of which he had received £9 4s. He was prepared to substantiate his claim by two witnesses. Mr. Frederick Honour, builder, declared the work had been done by contract at an agreed price for £6, and £2 10s. for extras. He had, however, paid the plaintiff £9 4s. in order to get the work done. He was prepared to abide by the sum agreed or to have the work valued. Mr. W. F. Potter, architect, attended, but the learned judge did not consider his evidence necessary. His Honour, in summing up, stated he had not the slightest doubt but that the work had been done by contract, and that the plaintiff had not only received the amount agreed but considerably more than he was entitled to. He could not conceive how employers could manufacture contracts unless they had been entered into, and after a very lengthy and elaborate exposition declared the plaintiff had no case. He therefore gave a verdict for the defendant, and allowed all costs incurred.

◆

Our Office Table.

THE ROYAL ACADEMY. — By an alteration in the laws of the Royal Academy, the number of members constituting the Council has just been increased to twelve. This alteration will not, however, come into full force until next year, the number for the present being only increased by two. After the retirement of the four senior members next year the Council will be raised to its full strength by the election of six new members to fill their places; six members having been already elected to fill the vacancies caused by the retirement by rotation of half of the old council.

DEATH OF MISS HERFORD.—The death of Miss Louisa Herford, an artist of considerable promise, has been announced. Miss Herford was well known as the first female pupil admitted by the Academy. Her drawing for the competition was signed "L. Herford," and obtained her a place among the other students: when it became known that "L." represented a lady's name there was considerable demur on the part of the authorities, but ultimately her claim to become a pupil was admitted.

CHURCH EXTENSION.—The Incorporated Society for Promoting the Enlargement, Building, and Repairing of Churches and Chapels held its usual monthly meeting at 7, Whitehall, on Monday afternoon, the Rev. S. W. Lloyd in the chair. Grants of money were made in aid of the following objects:—Building a church at Chalk, in the parish of Dalston, near Carlisle; rebuilding (on a new site) the church of Bexley-heath, Christchurch, Kent; enlarging or otherwise increasing the accommodation in the churches at Coberly, near Cheltenham; Old Radford, near Nottingham; and Spennymoor, in the parish of Whitworth, near Ferryhill, Durham. Many applications for the Society's aid stand over till another month, owing to the great difficulty felt in obtaining funds.

SOCIETY OF ENGINEERS.—The annual dinner of the above Society took place on Monday at the Cannon-street Hotel, under the presidency of Mr. Adams, President of the Society for the year, and engineer-in-chief to the North London Railway. About seventy members of the engineering profession were present. The toast of the evening was "Prosperity to the Society of Engineers," which the chairman introduced with a comprehensive sketch of engineering triumphs, from the harbours and aqueducts of the Greeks and Romans down to the great engineering works of the present day. The toast was received with great enthusiasm, and was appropriately responded to by Mr. A. Williams. Mr. Harris, secretary to the Society, was unremitting in his attention to the visitors.

THE LANDSLIP AT WHITBY.—House property (remarks the *Pall Mall Gazette*) must be a precarious investment at Whitby, judging from the great destruction of property that has just occurred there owing to a landslip. A great portion of the East Cliff seems to have taken a header into the sea, carrying with it part of a churchyard, a field, and several houses. It is stated that eighty-three years ago a similar disaster occured, causing even more damage than on the present occasion; and altogether Whitby seems to have been in former years considered by the elements in the light of a plaything, for we learn by the "Annual Register" of 1763 that on the 1st of December of that year there arose at night a furious storm of wind and rain, which did vast damage by sea and land all over Great Britain and Ireland, but more especially at Whitby, where the south-west side of the old abbey, though supported by more than twenty Gothic arches, gave way, trembled to the foundation, and not a stone of it remained standing; also, in the "Annual Register" of 1760 it is stated that on the 11th of September of that year three dwelling-houses at East-row and two bridges were carried away by a great land flood.

◆

MEETING FOR THE ENSUING WEEK.

FRIDAY.—*Architectural Association.*—"On the Architectural Treatment of Rubbish." By Mr. Gilbert R. Redgrave, A.R.I.B.A. 7.30 p.m.

Chips.

The new work on "Architecture" by Mr. Burges is now in course of distribution to the subscribers.

From a list of nearly two hundred applicants we learn that fifteen instead of ten architects have been selected to compete for Messrs. Spiers and Pond's Criterion; the names of the successful candidates are with one or two exceptions but little known to us.

The private view of the Second Winter Exhibition of the Works of the Old Masters will take place at the Royal Academy, on Saturday, the 31st inst., and the exhibition will open to the public on Monday, Jan. 2nd, 1871, for about six weeks.

An acoustic trial of the Royal Albert Hall, attended with marked success, took place on Wednesday last, on which occasion many architects were present who had been invited to inspect the galleries in that building set apart for architecture in the forthcoming International Exhibition.

Mr. T. Shepherd, solicitor, has filled in the north aisle of S. Mary's Church, York, with stained glass, in memory of his parents. A stained memorial window has also been placed in the Minster.

The Town Council of Bradford, on Tuesday week, agreed to purchase the undertaking of the local gas company for £210,000.

The whole of the new street from Blackfriars (opposite the eastern end of the Thames Embankment) to the Mansion House is not likely to be opened until June or July next.

Application is to be made to Parliament for leave to alter the foundation of S. Paul's School by Dean Colet, and also for power to enlarge the building.

A new altar-piece has been erected in the sanctuary of York Minster. Mr. Street is the designer, the work having been executed by Mr. Earp.

A meeting of the Royal Sanitary Commission was held on Monday last, Sir C. B. Adderley, M.P., presiding.

A large number of Wesleyan Methodists assembled at the City-road Chapel, on Monday last, to witness the ceremony of uncovering a marble monument erected to the memory of the mother of John Wesley.

The consecration of the Martyrs' Memorial Church, S. John-street-road, Clerkenwell, which was fixed for to day (Friday), has been postponed on account of the necessary amount of money not having been subscribed.

◆

Timber Trade Review.

THIS week's sale.—Per Petg. std. Kramfors mixed yellow, 9*l* 10*s* to 9*l* 15*s*; do. 3rd yellow, 7*l* 15*s* to 8*l* 15*s*; do. common yellow. 7*l* 15*s*; Jacobstadt 1st white, 7*l* to 7*l* 15*s*; do. mixed yellow, 7*l* 10*s* to 10*l* 10*s*; Hudikswall mixed yellow, 7*l* 5*s*; do. mixed white, 6*l* 15*s* to 8*l* 10*s*; Holmsund 3rd yellow, 7*s* 10*s* to 8*l* 15*s*; Gamla Carleby 1st yellow, 7*l* to 8*l* 10*s*; do. mixed yellow, 8*l*; do. 2nd yellow, 7*l*; Christiana 2nd yellow, 7*l* 5*s*; do. 2nd white, 6*l* 15*s*; do. 3rd white, 5*l* 15*s*; Nordmaling mixed yellow, 7*l* 5*s*; do. 3rd yellow, 6*l* 15*s*; do. mixed white, 6*l* 15*s* to 7*l* 10*s*; do. 3rd white, 6*l*; Nystadt white 6*l* 15*s* to 7*l* 15*s*; Ormskoldsvik millsawn yellow, 5*l* 15*s* to 7*l*; do. handsawn yellow, 5*l* 15*s*; do. handsawn white, 6*l* 5*s*; Petersburg 1st white, 8*l* 5*s* to 9*l* 5s; do. 1st yellow, 10*l* 15*s* to 13*l* 5*s*; Quebec 1st bright yellow pine, 12ft. 3 × 11 in., 19*l* 5*s*; 2nd bright do., 12ft. 3 × 11in., 13*l* 5*s*; 2nd floated do., 12ft. 3 × 11in. 12*l*; 3rd bright do., 12ft. 3 × 11in., 9*l*; 3rd dry floated do., 12ft. 3 × 11in., 8*l* 10*s* to 9*l* 10*s*.; Sundswall mixed yellow, 9*l* 10*s* to 9*l* 15*s*; do. 3rd yellow, 8*l* 10*s*; Stockholm 3rd millsawn yellow, 8*l* 10*s*; do. mixed white, 8*l*; do. 3rd white, 7*l* 5*s*; do. handsawn mixed yellow, 7*l*; do. 3rd yellow, 5*l* 5*s*; do. mixed white, 6*l* 5*s* to 7*l* 10*s*; do. 3rd white 7*l*; Skelleftea mixed white, 6*l* 15s. to 7*l*; do. 3rd white, 6*l* 5*s* to 7*l*; do mixed yellow, 7*l* 10*s* to 8*l* 10*s*; do. 3rd yellow, 7*l* to 7*l* 10*s*; do. 4th yellow, 6*l* 10*s* to 7*l*; Stockviken 3rd yellow, 8*l*; do. mixed white, 7*l* to 7*l* 10*s*; do. 3rd white, 6*l* 15*s* to 7*l* 5*s*; Sandame mixed yellow, 8*l* 10*s* to 11*l* 10*s*; de. 3rd yellow, 7*l* 10*s* to 7*l* 15*s*; do. 4th yellow, 6*l* 10*s* to 7*l* 5*s*; Uleaborg mixed yellow, 7*l* to 9*l*; do. 1st yellow, 6*l* 15*s* to 8*l* 5*s*.

Timber, per load of 50 cubic feet.—Skelleftea yellow balks, 1*l* 15*s*; Quebec elm, 4*l* 10*s*; do. yellow pine, 4*l* 10*s*

◆

LATEST PRICES OF MATERIALS USED IN CONSTRUCTION.

METALS.

LEAD:—

Pig Foreign	per ton	£17	12	6	£17	15	0
,, English W.B.	do	19	15	0	0	0	0
,, Lead Co.	do	18	15	0	19	0	0
,, Other brands	do	18	5	0	0	0	0
Sheet Milled	do	19	0	0	20	0	0
Shot, Patent	do	20	10	0	21	0	0
Red or Minium	do	19	15	0	20	10	0
Litharge, W.B.	do	0	0	0	0	0	0
White Dry	do	27	0	0	0	0	0
,, ground in oil	do	0	0	0	0	0	0

THE BUILDING NEWS.

LONDON, FRIDAY, DECEMBER 30, 1870.

S. MARY-LE-WIGFORD, LINCOLN.

THE remains of Saxon buildings in this country are so few and fragmentary that their preservation is a matter of considerable importance. The value of these structures, from an archæological point of view, is undoubted; even Mr. Fergusson, in his "History of Architecture," who has a very poor opinion of Pre-Norman work, and considers that the buildings erected before the Conquest must have been of such a rude and barbarous character that their wholesale destruction by the conquerors is no matter for regret, acknowledges at the same time that the disposition and uses of some portions of Norman buildings, which are at present a mystery to us, might be easily explained if we had more Saxon remains to guide us in forming an opinion. Unfortunately, however, all traces of Saxon work in England, with the exception of some fragments of doubtful date, and the towers of some few churches, have become obliterated, and we are reduced to conjecture, or the comparison of buildings of a similar age abroad, or the scanty records of contemporary authors, as the only means of enlightenment with regard to the character and development of civil and ecclesiastical architecture in this country anterior to the invasion of William the Norman.

Looking, then, to the actual historical value, as well as the interest attaching to these relics of antiquity, it is clearly most desirable to prevent their destruction or mutilation, and as it is impossible to repair an injury when once it has been inflicted, or to restore an ancient feature that has been once obliterated, it is necessary that a watch should be kept over these buildings, and that public attention should be called to them, not only when threatened by actual or prospective damage or removal, but even when there exists only a possibility of injury or interference with their value as monuments. The necessity for this may be illustrated by the example of what lately occurred at the church of Worth, in Sussex, which has been deprived of its most characteristic features in the process of restoration. It is possible that when once the work of reparation was begun, it was found impracticable to save the most ancient portions of the church; but, if public opinion had been attracted to the subject in time, and the danger of interference with such a building properly explained to the persons interested, the restoration would not have been undertaken at all, and the church might have been preserved for another century or so intact.

The ancient tower of the church of S. Mary-le-Wigford, at Lincoln, is now possibly threatened with a similar fate to that which so recently overtook the church at Worth, and it is in order to avert this possible calamity, and not in a mere spirit of fault-finding, that we desire to draw attention to this matter, and to invite explanation before the works are commenced.

A short time ago an advertisement appeared, signed by the vicar of the parish, inviting architects who were disposed to compete to send in plans for the proposed restoration of the parish church of S. Mary-le-Wigford, Lincoln. No premium was offered, nor any further particulars furnished, beyond the date when the plans were to be sent in.

It is a rather unusual course to advertise for plans for the restoration of a church, and although there may be at times circumstances which may to some extent excuse such a method of obtaining professional assistance, it is, as a rule, quite indefensible. We understand that, although the vicar's name is attached to the advertisement referred to, that gentleman was desirous of employing some local architect to carry out the work, and that the resolution of the building committee to advertise for designs was carried out against his wishes. In any remarks that we may have to make on the conduct of the building committee, we are desirous of avoiding any imputation upon the vicar, who is, we are informed on good authority, a zealous and enlightened antiquary, and is secretary of the Lincolnshire Architectural Society.

The proceeding of the building committee in advertising for plans, which is only, in other words, putting up the work of the restoration to the lowest bidder, and subjecting the church to the chance of injury or disfigurement at the hands of an incompetent or inappreciative man for the sake of an inconsiderable saving, would be blameable under any circumstances. Their culpability is, however, increased from the fact that the building they thus put up to auction is one of the most interesting churches in the county, and has a magnificent Saxon tower, of a character almost unique in this country.

Those who accompanied Mr. Edmund Sharpe in his excursion to Lincoln in the autumn of this year may remember the tower of the church of S. Mary-at-Wigford, which is situate in the High-street, adjoining the Midland Railway Station, and is a very noticeable feature to the traveller on alighting at the station. It exhibits nearly all the characteristic features of eleventh century work, which are thus described by Rickman:—

"First as to the masonry, there is a peculiar sort of quoining, which is used without plaster as well as with, consisting of a long stone set at the corner, and a short one lying on it, and bonding one way or both into the wall. When plaster is used, these quoins are raised to allow for the thickness of the plaster. Another peculiarity is the use occasionally of very large and heavy blocks of stone in particular parts of the work, while the rest is mostly of small stones; the use of what is called Roman bricks and occasionally of an arch with straight sides to the upper part instead of curves. The want of buttresses may be here noticed as being general in these edifices. An occasional use of portions with mouldings much like Roman, and the use in windows of a sort of rude balustre, . . . and at times the use of rude carvings, much more rude and shallow than the generality of Norman work, and carvings which are clear imitations of Roman work."—Rickman, p. 60.

The tower has "long and short work" at the angles, a round arched doorway on the west, with shallow mouldings, and the tympanum filled in with a rude bas-relief; the lower portion above the door is unpierced and entirely unornamented, and the upper part has four two-light windows with cushion capitals. The general form is quite uncommon in England, but is not at all uncommon in some parts of Switzerland and Italy, and it is, no doubt, a work of the eleventh century, in excellent preservation. The tower of the church of S. Mary-le-Wigford is not mentioned by Rickman in his description of the buildings of the eleventh century, but is included in the list of examples in the appendix to the last edition of Rickman's work by Mr. John Henry Parker. Mr. Parker considers that the tower and the tower of the neighbouring church of S. Peter-at-Gowts, belong to what he calls the Early division of the Norman style, comprising the period from 1060 to 1090, or from a few years before the Norman Conquest to the end of the reign of William the Conqueror, although he gives no sufficient reason for this arbitrary assignment of dates, against which practice he elsewhere energetically protests. The date of the building of the church is fixed by the Liberate Roll of the eleventh of Henry III. as having been in progress in the year 1228. It consists of a nave, chancel, and north aisle, south porch and the square tower already referred to at the west end. The south side of the nave is the earliest portion in point of date after the tower; the aisle appears to have been added subsequently to the building of the nave, and the windows enlarged probably during the reign of John. The upper part of the aisle is of the time of Henry VII.

On the west side of tower is a Roman tombstone, built into the wall, with the following inscription:

DIS MNIBUS
NOMINI SACRI
BRVSCI FILI CIVIS
SENONI ET CARSSO
VNAE* CONIUGIS
EIVS ET QUINTI-F

Half the last line is cut off in the stone, which has been thus translated: Diis manibus nominii Sacri Brusci filii civis Senonii et caussimæ conjuges ejus et quinti filii.

Every lover of antiquity would naturally regard with apprehension the proposed restoration of a building of such age and interest as that we have described, even if the superintendence of the work had been entrusted to skilful and experienced hands, but these fears would be increased if they knew that the selection of the architect had been determined on in the hap-hazard manner proposed by the building committee of S. Mary-le-Wigford. It is said that it is only contemplated to add an aisle on the north side for additional accommodation, and that it is not intended to touch the tower. We should be glad to know that this is the case, but should like to have an authoritative assurance from the committee to that effect, as well as that the work shall be placed in the hands of a perfectly competent architect.

The people of Lincoln are not remarkable for their reverence for antiquity. The hall of S. Mary's Guild, or the Merchant's Guild, more popularly known as John of Gaunt's Stables, described by Hudson Turner in his "Domestic Architecture of England" as probably the most valuable and extensive range of buildings of the twelfth century that we have remaining in England, is divided into tenements, and used as a malt house, and is gradually hastening to decay.

The roof is modern, and the upper part of the walls have been taken down; the lower part of the walls, including the whole of the lower story, are, however, nearly perfect. In any other country but England steps would have been taken to preserve this building as a national monument. The interesting twelfth century house on Steep Hill, known as the Jew's House, which belongs to the Dean and Chapter of Lincoln, is perishing piecemeal from neglect. In Turner's "Domestic Architecture," published in 1851, is a drawing of the Jew's House, by Twopeny, showing a lancet window on the upper story, and the original opening on the ground floor, both of which features have now disappeared.

◆

THE SANCHI TOPE.

THERE is at present on view at South Kensington a most interesting plaster cast of the eastern gateway of the great Buddhist tope at Sanchi, in Central India, in the territory of the Begum of Bhopal, and also some paintings, which show the present condition of the monument and the method adopted in taking this plaster cast.

This is one of the oldest of the monuments of India, and the portion from which this cast has been taken—one of the entrance gateways to the enclosure round the tope—dates from about the commencement of the Christian era. It is interesting in many ways, partly from the peculiarity of its structure, which, though of stone, evidently bears the impress of having been derived from still older wooden constructions, and partly from the character and meaning of the sculptures with which it is decorated.

---

* Or VME.

The tope is situated on the top of a sandstone hill, about 300ft. above Sanchi. It is a memorial monument, a development of the simplest mounds which were erected for similar purposes in the earlier stages of civilisation in almost all parts of the globe. Neither the model, which is placed in the same apartment, nor the painting exhibited to show its present condition, shows it with all the parts it once possessed, but numerous representations of topes in the sculptures give the idea in its integrity, and this may be described as follows :—

The monument itself consisted of a solid domical structure of brickwork encased in stone, about 120ft. in diameter and 60ft. in height, surmounted by a structure which represented the umbrella-like covering with which everything sacred was covered, an emblem of dignity derived from the umbrella carried over the heads of sovereigns to shield them from the sun in that sultry climate. This part of the monument has been destroyed, and it is to the smaller representations of it in the sculptured panels that it is to be traced as an integral portion of the work. In the sculptures, again, it may be seen that the surface of the dome was hung on festive occasions with garlands and votive offerings : a set-off on the domical surface, at a height in the model representing probably some 20ft. is said to have been a procession path used upon such state occasions. This dome itself is supposed to date from about 500 B.C. At some distance around it is a most curious stone railing, erected some 250 years later, composed of upright bevelled posts, with cross pieces between them, manifestly a version in stone of a wooden type. To this were added some two hundred and fifty years later still the four gateways (of one of which this cast is a copy), placed equidistantly from each other. Two massive posts, with groups of elephants as capitals, bear a series of cross-beams, with what may be called interties and brackets to support them; the whole richly encrusted with carving, and the hollow spaces between were likewise filled with figures standing upon the beams, and the contrast of this ornament in the solid and in relief against the open sky behind is striking.

These sculptures deserve careful study, as they most faithfully pourtray the races which inhabited India at the time of its erection. The conquering race, the Hindoos, though gorgeously were most lightly clad, with the view of ornamentation rather than decency, since bands and spangles, armlets and head dresses, compose what can scarcely be called the covering of the human form; whereas the subject aborigines seem to have gone in less for the ornamental and more for the useful, and are dressed in coats of sufficient dimensions. But animals are more ably carved than the men and women, and some of the elephants are in vigorous action cleverly pourtrayed. There is one frieze-like group at the back of the monument of a number of elephants, with upraised trunks, in adoration of a sacred tree, which is really fine. Many other panels also deserve notice, and are worthy of examination as showing the method and object of the worship then carried on. One panel, and one only that we saw, showed traces of the serpent worship. In this a seven-headed monster surmounts the altar before which the devotees are prostrated, but many show the sacred tree as the object of adoration, and one triple-branched one growing from out of an altar upon the principal frieze in the front is particularly conspicuous. The wheel which became the emblem of the law is also held up to honour, and one panel is filled with a pillar carrying this same wheel—the veritable pillar of the law. All these points are now the subject of much study, from which many valuable results are expected, the ancient creeds having acted and reacted upon each other to an extent hardly yet sufficiently realised. Among them Buddhism was an important one, as its votaries far outnumbered those of any other creed except the Christian, "and this ancient monument is one of the earliest records of the growth of a religion which now owns not a single follower in the cradle of its birth—India, but can count in other countries 222,000,000 adherents."

The following information given as to the operation of taking the cast will show the difficulties that have had to be surmounted in the procuring of this fresh object of interest for the Museum :—

"This cast was made in the winter of 1869-70, under the direction of Lieut. H. H. Cole, R.E., Superintendent of the Archæological Survey of India, North Western Provinces, by Serjeant Bullen, R.E., Corporal Jackson, R.E., Corporal Heath, R.E., and nine native modellers. The party left Calcutta on the 10th December, 1869, and Jubbulpore on the 13th, where the materials, tools, plaster of Paris, &c., weighing in all 28 tons, were transferred to country carts drawn by bullocks. Sixty carts were procured at Jubbulpore, and and on 20th December the march was commenced to Sanchi, about 180 miles distant. On 7th of January, 1870, Sanchi was reached, and the work of casting commenced. The cast was completed on the 21st February. 1870, and reached London, *via* Hoshungabad, Bombay, Suez Canal, and Liverpool, early in June. Three copies were then made by October of the same year. The process of making elastic moulds with gelatine was employed both at Sanchi and in the repetition of copies in London."

◆

ARCHITECTS, BUILDERS, AND COMPETITIONS. — A LESSON TO THE INSTITUTE.

THE London Builders' Association has recently set an example to the Institute of British Architects which ought to be of service, if, indeed, any example, or precept either, could be of use in directing the latter body to take active measures to protect the interests of the profession, its recent steps having been decidedly of a retrogressive, rather than progressive, character. A proper set of conditions of contract having been determined on, in which the interests of the builders are carefully protected, the members have agreed that in future they will not tender for any works on competition unless those conditions are observed. A simple measure, and likely to be as effectual as it is simple. Contrast it for a moment with the results of the labours of the Institute Committees on Competitions and Professional Practice. An elaborate report was drawn up on the first subject some years ago, in which certain very obvious principles were enounced as requisite to be observed in competitions, but as nothing was done to secure their adoption this paper has remained a dead letter ever since. Much the same may be said of the paper on professional practice issued eight years ago, which having been triumphantly held up by various presidents in their addresses as "universally accepted and recognised in courts of law," has just been pronounced by one of the aforesaid presidents (Professor Donaldson) "as incapable of proof, illegal, and unreasonable," and the conduct of those architects who have acted on it, and endeavoured (with a fair amount of success, too,) to secure its legal recognition, deprecated as damaging to the interests of the profession. In the mean time the public is beginning to find out how weakly the profession hangs together, and in every possible way is disposed to infringe on its hitherto unquestioned rights. As the architects have not the sense or the courage to lay down certain conditions on which they will enter into competitions or undertake works, the public is determined to do that for them. There is scarcely ever a competition announced now without a long string of one-sided conditions, leaving the architects absolutely at the mercy of the committees, and yet these are just as eagerly rushed at as if the conditions were the most fair and honourable. One encroachment after another is made, until at last we come to something like the following, which is a fair specimen of what the modern system of competition—through the indifference of the Institute—is rapidly verging towards. First we have, of course, the advertisement :—

"Competition.—To Architects.

"The committee of the New United Secession Free Melodist Connexion, being about to erect a chapel and schools at Swindlington, hereby invite architects to submit designs for same. As it is expected there will be a great number of applications, in order to meet the expense of plans of site and particulars, a deposit of £10[*] will be required from each applicant before these will be furnished, which sum will not be returned under any circumstances. Apply (prepaid with enclosure) to the Rev. Worldly Wiseman, Swindlington."

Application having been made (with the proper enclosure), next come the particulars and conditions :—

"Instructions to Architects and Conditions of Competition.

"1. The chapel to seat 1,600 persons, and the schools to accommodate 500 children; 6 class-rooms or vestries, average 400ft. super each. Residence for chapel-keeper. Cost, including boundaries, lighting, warming, ventilation, architect's and clerk of works' fees, and all extras, not to exceed £4,000. As systematic extortion[†] forms an important element in the practice of the Connexion, this is to be well borne in mind.

"2. The drawings to be to the scale of ⅛th of an inch to the foot, and to comprise block plan, basement, ground floor, first floor, and roof plans, a full set of elevations, sections, and details of every part ; the latter to the scale of 1in. to the foot. Also perspective views of the interior and exterior, and a complete specification.

"3. The architect whose designs may be considered best by the committee to receive a premium of £20 for same, and the drawings to become the absolute property of the committee, who are not to be in any way bound to employ the author further, but the architect is to be bound for an additional sum of £20[‡] to furnish from time to time all such further enlarged details and instructions as may be requisite for carrying out the work. Should the architect be employed at a commission not exceeding 5 per cent. the premium to merge in the same, which is to include everything—such as travelling expenses, measuring fees, and the salary of the clerk of works.

"4. The drawings must be delivered *carriage free*, but the unsuccessful designs to be returned to their authors *carriage unpaid*, and the committee to be in no way responsible to any of the architects for any damage or for anything else, and not to be bound to come to any decision or award any premium. Also, in particular not to be bound by any rules of any institutes or societies of architects; or, in fact, by anything else but 'their own sweet will.'

"5. The premium is not to be paid to the architect whose design may be selected till a tender from a builder (to be approved by the committee) is received showing that it can be carried out for the amount specified. Should the tenders indicate a larger amount, the architect is not to be entitled to the premium, or any remuneration whatever, and is to pay the surveyor's fees and all expenses incurred in getting tenders, also the sum of £50 as damages to the committee for loss of time, &c., relative to the abandoned design."[‖]

Nearly all the above conditions, or what are tantamount to them, have appeared in various recent competitions, and some of them are quite familiar to us by this time. Perhaps by the time they have become universal, and have acquired the legal force of usage, which the papers of the Institute so much lack, that august body will think it worth while to "recommend" its members not to compete on these terms; but any such vigorous action as that taken by the Builders' Society is not to be expected from it under any circumstances.

"Competition is the Life of Trade."

---

[*] A similar condition to this was advertised at Leeds not long ago.

[†] This must be a misprint for "exhortation." It is very suggestive however.

[‡] This condition appeared in a competition for a Wesleyan Chapel at Plymouth a few years ago.

[‖] These conditions, as well as Nos. 2 and 4, are becoming quite common of late.

THE EXHIBITION OF OLD MASTERS AT THE ROYAL ACADEMY.

WE have already announced to our readers the approaching opening of a second Exhibition of Old Masters at the Royal Academy. The private view of this collection takes place tomorrow, and the exhibition will be opened to the general public on Monday, the 2nd of January. On ascending the steps at Burlington House our attention is immediately attracted to the two grand and striking landscapes by Salvator Rosa, lent by the Marquess of Westminster, which have been placed in the vestibule, and which, by their sombre grandeur and powerful painting, seem to us worthy seneschals of so many splendid works of art. Indeed, by their position they lured us on, after a due consideration of their excellence, to view the great room in which we naturally expected to find the best pictures; nor were we disappointed, though the Academy, by the numbering of the catalogue, seems to consider it proper to partake of the more insignificant dishes of the great feast before attacking the *piece de resistance*. In our former notice we remarked that the present exhibition would be a very fine one, but we ourselves scarcely expected to see so many pictures of really surpassing excellence gathered at one time under one roof, and we feel that to have obtained such a collection, not only must the picture collectors have been unusually complaisant, but the Academicians themselves must have acted with uncommon energy. On entering the great room our eye is insensibly attracted to the three centres. No. 110, "The Wolf Hunt," by Rubens, occupying the left centre, is a splendid specimen of the master, wherein may be well seen his wonderful power as an animal painter, and his fine perception of the brute nature. Let the student observe closely the way in which the attacking wolf turns round to bite the cold iron with which the spearman is thrusting him; another wolf turns upon the dogs who have seized him, while the foxes, trampled under foot by man and horse slink away. The trumpeter blowing his horn to summon the huntsmen to the death is scarcely less of an animal than the wolves themselves. The baron, who with his lady has gone forth with hawk and hound to the sport, rides on his white horse into the middle of the fray. Who but Rubens would have dared to bring the white charger off the light sky, or, with the very *bravura* of power, to paint the horse on which a huntsman is prancing forward of a piebald colour, so as to make a more agreeable form of light at that side of the picture? This is altogether one of the finest works by this master we know of, and though it is possible that Snyders may have lent him some assistance in painting the animals, the entire spirit power and vigorous energy of the work are undoubtedly due to Rubens. Opposite the "Wolf Hunt," on the right-hand centre, is the "Esther and Ahasuerus," of Tintoretto, No. 151, lent by her Majesty the Queen, from the Hampton Court collection. This picture is full of animated life; there is no feeling of composition in it, but the sense that it is the scene as it may and must have happened. This reality is a quality rarely met with in art; perhaps the Cartoons are an instance of it, although even they have a little more feeling of pose than Tintoretto's work. Those who recollect the masterpieces by this painter in Venice will recognise the above quality, so finely shown in "The Crucifixion," the nailing to the cross of those three companions, companions only in death, in life so widely separated; or the other grand picture of "Our Lord Toiling up the Hill of Golgotha." The possession of such works alone would make Venice favoured among cities. The Tintoretto now before us is a noble piece of Venetian colouring, and should be studied with the Rubens in order to compare the different systems of colour used by the Flemish and Venetian schools in the hands of two such great masters, at once so different and so eminent. Beneath the Tintoretto is placed a very fine Holbein, No. 153, portrait of Thomas Howard, Duke of Norfolk, also lent by the Queen; and on either side hang portraits, No. 152, John Evelyn, of Wotton, the famous author of the "Sylva," by Walker; the other, the true original of Gainsborough's "Blue Boy," No 154, Edward Gardiner, nephew of the painter. It is satisfactory to see that these two specimens of English art bear well their juxtaposition with such a noble portrait as that by Holbein. On either side again are Claudes, on the right the second Altieri Claude, No. 149, "The Landing of Eneas," which is not so good as the companion exhibited here last year; and on the left, No. 156, landscape, "The Sermon on the Mount," belonging to Lord Westminster. Other schools of landscape are founded upon exact and minute imitation of nature; these Claudes, while eminently characteristic of what is grandest in nature, carry us into a happy dreamland far away from the dull commonplaces surrounding us. The Claude belonging to Sir W. Miles contrasts with its pendant, No. 156, by its greater freshness (a freshness almost amounting to coldness) and brilliancy: we shall refer to it again in a future notice. In the centre of the great room at the end is placed the portrait of Lady Anne Fitzpatrick, known as "Sylvia," by Sir Joshua Reynolds, belonging to Lady Lyveden, No. 132. This is indeed the perfection of portraiture. What a lovely background! and what a sweet young girl bathing her pink feet in the rivulet! What breadth, what tone, and what richness of colour! Surely to look at this picture is to love it! See, too, how well it bears comparison with Lord Westminster's fine Rembrandt, No. 136, "Portrait of a Lady with a Fan." Mrs. Culling Hanbury's Murillo, "The Flight into Egypt," No. 128, is a picture full of tone and of a higher quality than usual, but the lights are a little crude. On this side too, Turner and Callcott hang as pendants. Between the door and end of the room on the left hand side is a fine Bassano, "The Portrait of a Senator," No, 120, and on the right hand, "The Portrait of a Lady," by Nicholas Maes, No. 143. This latter is a fine work, and deserves careful study from the young painter, on account of its breadth of treatment and perfect finish, without the sense of its being at all laboured. Here, too, Mulready and Terberg, Nos. 142 and 146, may be studied in juxtaposition. The Mulready is full of colour, and carefully and wonderfully finished, but hot and red, while the Terberg is at least more true to the general hue of nature. No. 117, "The Sea Coast," by Jacob Ruysdael, should be closely examined by the student. Let him remark how the reality of Nature is attained by truthful labour; mark the wonderfully flat sea with the waves lengthily breaking on the shallow sandy shore. The rolling clouds and grey sky and the dunes in the foreground, are all most characteristic of Dutch scenery, and painted with extraordinary skill. Mrs. Bradshaw may well be congratulated on possessing such a rare treasure. No. 121, "Morning," by Claude, is full of light and rich translucent effects. No. 119, "The Glebe Farm," is a capital specimen of our English landscape painter, Constable's, work. Close by hangs a choice Teniers, "Card-playing," No. 122, the property of Mr. Field, of Ashurst. At the other end of the room is placed No. 160, "Colonel Tarleton," a noble portrait by Sir Joshua Reynolds; and as a pendant to this hangs "The Countess of Sussex and Lady Barbara Yelverton," by Gainsborough. Here is, indeed, a treasury of study. How naturally and composedly Lady Barbara, a young girl between ten and twelve, stands beside her mother, just as a simple child would place herself. How finely, too, the light of the sky is, without apparent premeditation, so treated as to increase the principal mass of light. How little sense there is of paint; how pure and delicate are the tints of both flesh and drapery. This is certainly one of Gainsborough's finest works. In this room, too, may be studied almost a complete collection of the three different periods of Gainsborough's great ideal, Vandyke; that painter whom on his deathbed he exclaimed was going with him to a better place. No. 143, "The Balbi Children," and No. 147, "A Genoese Senator," are painted in his first or Venetian manner; and there are several other beautiful specimens of his works during this period in the room. Vandyke visited Italy early in life, full of the knowledge he had obtained from his great master Rubens, yet open to all the impressions that would be likely to be made upon a young and ardent mind by the Venetian and Lombard schools. His pictures at this time have a fullness of impasto and richness of colour which we do not see when his own style became more confirmed, as in the very fine replica of the "Countess of Santa Croce," No. 150, painted in what we may call Vandyke's middle manner. This portrait is certainly as fine as the one exhibited last year belonging to the Queen, and is identically the same with it, so that it would be difficult to decide which is the first and which is the second work. When Vandyke had obtained a just celebrity and was fully employed as the court painter, he, like other portrait painters, fell away from his early earnest excellence and adopted a more facile method of painting, brilliant and clever in its way, and which, though perhaps hardly to be so much admired as his more earnest Venetian manner, yet enabled him to get through the enormous amount of work he did before his early death at the age of forty-two. In this room also is placed Vandyke's portrait of "Sir Edmund Verney the Younger," standard-bearer to Charles I., who was killed while defending his standard at Edge-hill. The marshal's baton of this staunch Royalist is preserved, and placed beneath the picture, which is now in the possession of Sir Harry Verney. No. 137, "Lady Russell and her Child," is a fine portrait by Romney. Lord Ashburton's noble Rembrandt, No. 114, simply called "A Portrait," is a splendid work. See how grandly the head is set upon the shoulders, and how vigorously it stands out from the background. A nest of small pictures surrounds Reynolds's portrait of "Lady A. Fitzpatrick, two charming little Watteaus, and some very delicate and highly-finished works by Teniers. We cannot quit this room, and end our remarks upon the "Old Masters Exhibition" for the present, without calling attention to Sir Joshua's portrait of Charles James Fox as a young man, with Lady Susan Strangeways and Lady Sarah Lennox, standing in the balcony of Holland House. This picture, we believe, has never left the walls of that pleasant Jacobean mansion at Kensington since it was first painted till now kindly lent to the Royal Academy by Lady Holland. The richness of the treat in store for our readers may be easily estimated when we remind them that in reviewing this exhibition we have at present only been through one room; true, it is the largest gallery in the suite, but there are seven other rooms still waiting to be explored, containing many masterpieces of deceased British painters, besides foreign works. The entire collection of Lord Dudley, in which are many priceless treasures, alone takes up three rooms. We hope in a future article to point out their excellences to our readers, but in the mean time they will have enough to do in one visit if they carefully examine the pictures of the great masters already brought under their notice.

◆

COMPETITION.

Yeovil Cottage Hospital Competition.—The report of the sub-committee appointed to select a design for the Cottage Hospital was approved by the general committee on Thursday week. The motto of the design chosen out of twenty-eight sent in is "Well considered," the author being Mr. J. Johnson, 35, Moorgate-street, London. The ground plan shows men's ward for six beds and an accident ward for four beds, with bath-room, ward scullery, lavatories, &c., adjoining. Near the entrance is the matron's room, with small window for overlooking the ward. The out-patients' waiting room, medical officers' examination room, and the dispensary are on the Ilchester-road side of the site, and on the Preston-road side are a small dining-room, kitchen, scullery, store closets, pantry, wash-house, laundry, coal-shed, &c. On the first floor are wards containing the same nnmber of beds as those on ground floor, the nurse's room being over the matron's. A servant's bed room, and clean linen and clothes stores, are also provided.

◆

Dundee Harbour.—So greatly has the direc jute trade of this port with Calcutta increased o late years, that more harbour and dock accommodation is needed. At a meeting of the Harbou Trustees on Monday week, it was resolved to complete the Victoria Dock immediately, at a cost of £120,000, and thereby provide for an additional number of large vessels.

POLLUTION OF THE YORKSHIRE RIVERS.

A GOOD deal has been said about the pollution of rivers by town sewage and agricultural manure, but little on the pollution and obstruction of rivers by manufacturing refuse. Although we noticed generally the Report of the Royal Commission at the time of issue, there are a few points in it to which we wish to draw public attention. The Commission selected for inquiry the Aire and the Calder — two rivers in the West Riding of Yorkshire—as being polluted by the refuse of manufactures, as distinguished from that of agriculture and town-drainage in the valleys of the Thames and Lea, which had already been reported upon.

Tarn is the name given to those small lakes situated at a high level in the hills of the West Riding; and Malham Tarn forms the extreme source of the Aire, in the Scar limestone strata; and two small streams arising in the millstone grit formation, near Todmorden, viz., the Cal and the Der, form by their junction the river Calder. These sources are all at a great elevation; that of the Aire being 1,243 feet above the mean level of the sea, and those of the Calder 1,500 feet above the same level; while, at the junction of the two rivers at Castleford, the elevation above the same level is but 40 feet. If we take the length of the Aire basin to this point at 45 miles, there is an average fall of about 27 feet per mile; and if we take the length of the Calder basin at 35 miles, it has an average fall of 40 feet per mile. The rainfall is very considerable here. The middle district, up to an elevation of, say, 1,000 feet, has an average annual rainfall of about 30in.; and in the upper district it varies from 30in. to 80in.; and the whole district may be said to have an average rainfall of 36in. and a minimum of 24in. These features of the country make it one peculiarly suitable to manufacturers requiring large quantities of water for both trade purposes and power.

The principal towns within the basins of these two rivers are Wakefield, with a population of 23,000; Dewsbury, 25,000; Huddersfield, 35,000; Leeds, 228,000; Bradford, 106,000; Halifax, 56,000; Todmorden, 9,000; Keighley, 20,000; Skipton, 5,000; Pontefract, 5,300; Bingley, 6,000; Castleford, 6,000; and altogether about 750,000 persons.

These Yorkshire rivers are the common receptacles of all kinds of manufacturing refuse, as well as sewage; and the large quantity of solid matter thrown in forms obstructions which make it impossible to treat quite separately the questions of obstruction and pollution. They are the receptacles for broken pottery and worn-out metal utensils, refuse brick rubbish, earth, stone, and clay from quarries and excavations, road scrapings, street sweepings, &c.; spent dye-woods and other solids used in the treatment of worsteds and woollens; hundreds of carcases of animals, as dogs, cats, pigs, &c., which are allowed to float on the surface of the streams or putrify on their banks; the flowing in, to the amount of many million gallons a day, of water poisoned by refuse from mines, chemical works, dyeing, scouring, and fulling worsted and woollen stuffs, skin cleaning and tanning, slaughter-house garbage, and the sewage of towns and houses. The amount of solids taken into the streams by sewers is, in the aggregate, enormous, throughout the West Riding. At Leeds, the volume of sewage passing into the Aire is from eight to ten million gallons a day, the entire weight of solids being swept out therewith; and this is the case throughout the district wherever main sewers and drains exist.

"Most of the towns in the West Riding have been partially sewered, and some houses also have been drained; but in no single instance has this work been thoroughly done.' At Leeds, Bradford, Keighley, Skipton, Todmorden, Halifax, Huddersfield, Dewsbury, Wakefield, and smaller towns, villages, mills and houses, the sewage passes at once into the streams of water.

There are large areas of land, both in the Aire and Calder valleys, which would be greatly benefited by a proper application of sewage. Where sewage will flow over a sufficient area of land by gravity there ought to be the best return for the expenditure, but towns having populations of 10,000 and upwards may venture to incur the cost of pumping sewage, and so reach lands less valuable than the rich garden or meadow land at lower elevations.

Besides the description of the peculiarity of the rivers in the manufacturing districts, the Commissioners offer some practical remarks on the subject of irrigation of land with town sewage, which are well worth attention. They say: "When a limited quantity of sewage or other water containing manure soaks into a fertile soil the first effect is to displace part of the water already contained in the soil, occupying its place in the interstices, whence the organic matter it contains is held in temporary union with the active soil, to be afterwards absorbed by the roots of plants or decomposed by the air, so that in a short time, varying according to the activity of vegetation and of decomposition, no impurity whatever remains." This view agrees with that expressed by another Commission in a later report, viz., that sewage water may be sufficiently purified by passing it through a filter-bed of porous soil or sand intermittently, giving one filter-bed a rest while another is being used, so that after the interstices of the filtering materials have been drained of water air occupies them, and on again turning sewage into the bed through the air-occupied interstices it becomes purified. To return to the Report: "If, then, the sewage which has soaked into the soil is not displaced by other water until a sufficient time for it to be purified has elapsed, it will, when displaced, be as pure as ordinary shallow spring water. If it be found that the depth of the active soil effecting this change is about half a yard, and that it contains about one-fifth of its weight of water, a quantity of sewage may sink into it equal to about 500 tons (per acre), or a depth of 5in., before the water previously in the soil within 18in. of the surface is all displaced; and if considerably less than this proportion of sewage, say 1in. to 2in. in depth, be put on rich soil at once, though the drains from it will run freely, as they do after heavy rain, they will be carrying away the water previously in the soil, and not, as is often supposed, that just poured upon it."

"Civilisation in its arrangements andnecessities may be compared toa machine. A rude and simple machine works well under the management of a peasant, but as it becomes more complex in construction, more delicate in its parts, more refined in its operations, so in like proportions, must those to whose hands its working is entrusted be more and more specially educated, skilful, and attentive. Modern civilization in Great Britain abstracts population from the country to aggregate it in towns, and this has gone on during the last half century with ever-increasing speed. Cities and towns in mediæval times had little in the way of sanitary works to be kept in order. At all times the public health was deteriorated by the accumulated and neglected filth, and when several seasons of bad weather followed each other, ordinary fevers ripened into sweating sickness, putrid typhus, and plague." Municipal works, "to be of the greatest service, must not only be skilfully designed and executed, but they must be intelligently managed; and, as with the working machine with refined and complicated parts there must be care and skilful management, so in like manner complicated sanitary arrangements in towns require the attention of specially educated men. Local self-governors do not always recognise this necessity; and by attempting to work with uneducated and underpaid labour, they bring discredit on their local works. If arrangements for the prevention of river pollution be added to the other duties of a local surveyor, the sanitary machine to be kept in order will be more complex. Sanitary works and arrangements in towns will only produce beneficial results under skilful superintendence unceasingly applied. It will be in vain to multiply preventive works and establish new regulations unless they are managed and maintained with the necessary skill and care."

ARCHITECTURAL ASSOCIATION.

ON THE ARRANGEMENT AND VENTILATION OF HOSPITALS.

THE reading of Mr. Salter's paper on this subject (an abstract of which appeared in last week's Building News) gave rise to the following

DISCUSSION.

Mr. New, in proposing a vote of thanks to Mr. Salter for his paper, said it was a very clear and instructive one. He (Mr. New) had had some experience in hospital construction, and the question he thought of more importance than others in hospital planning was that of ventilation. He should have been glad, therefore, if Mr. Salter had expressed his own views on this question of ventilation, and stated which of the systems brought forward in his paper he considered to be the best. There were two particular kinds of ventilation, viz., natural and artificial, both of which had been referred to. In the speaker's experience he had found the "Middlesex Hospital window" to be decidedly the best. Generally speaking, he had admitted a small amount of external air, and he had small apertures for the vitiated air to escape, but as a rule this was found to be insufficient. Even if they put an ordinary iron ventilator below it was not quite sufficient. But when they could open the window to any wished-for degree, they got a volume of fresh air sufficient for all purposes. He thought, therefore, that this window was really the best means of ventilation, with, however, the addition of the lower apertures just above the level of the floor. If they admitted the fresh air above, and did not admit it near the floor, they found that they did not get that which was to be desired; they only got an amount of cold air which fell down upon the heads of the patients. But when the air was admitted both above and below, that from above mixed with that from below, and they obtained efficient ventilation combined with an equable temperature. The principle which Mr. Marrable had adopted in the Small Pox Hospital at Stockwell—of carrying the pipes along the side of the wards—he thought was an excellent arrangement, and one well worthy of imitation, as the fresh air was well warmed before entering the wards. With reference to the shafts in the same building, in which the air was heated so as to facilitate exhaustion, he suggested that Howarth's or some similar make of ventilators should be fixed at the top, the spiral caps being kept continually moving by mechanical means where this was possible. Thus he thought they would obtain an exhaustive system which would be amply sufficient for efficient ventilation. But failing these appliances, he thought that two or three gas jets underneath the shaft (as in Mr. Marrable's hospital at Stockwell) would answer the purpose. As to the desirability of having stoves for warming, and whether they should be open or close, he was inclined to believe that the best system of warming, for hospitals as for other buildings, was by hot-water pipes. The only advantage in having stoves was that they were found useful by the nurses for warming or airing bed-linen, night-clothes, &c., but beyond this he thought the hot-water pipe system the most advantageous, although he knew that the majority of patients liked to see an open fireplace. He thought that a more even temperature would be obtained by hot-water pipes. With regard to the position of the water-closets, he thought the best practice in every respect was to have them entirely distinct from and outside the main building, the approach being by a small well-ventilated corridor, so that on all sides plenty of fresh air might be got. The cubical space named by Mr. Salter was, he believed, that usually allowed by most authorities on the question. The position of the administrative department and store rooms deserved careful consideration; as also did that of the sculleries, lavatories, urinals, &c. The advantage of the water-closets (when situated at the end corners of the ward) being placed anglewise or diagonally was very great. On the whole, he thought the pavilion system the one which was capable of conferring the greatest advantages on the patients. That natural ventilation is the best was the feeling of the medical profession.

Mr. Batterbury, in seconding the proposition, said he was very much surprised that Mr. Salter had only treated of hospitals upon the pavilion principle. There were two principal systems—the pavilion and the corridor, the latter of which was the most useful for study by them as junior members of the profession, as, by reason of its greater economy, it was being extensively employed by hospital committees and boards of guardians for the erection of small hospitals and infirmaries. He thought Mr. Salter had not been very fortunate in the selection of his examples of the pavilion system. The hospital at Stockwell seemed to have an excessive administrative department, while in the new S. Thomas's Hospital, on the same system, the administrative department was not half so large as that at Stockwell relatively to the number of patients it would accommodate. Neither had Mr. Salter treated of double wards, the advantages and economy of which he (Mr. Batterbury) thought very great, as an inspection of the new Chronic Wards at Marylebone would show. With regard to ventilation, the great authority, the Poor-Law Board (laughter) had laid it down as a rule—and they discountenanced anything like artificial means of ventilation—in their "points" (of which there were sixty, and they might be termed the "Poor-Law Creed") that there should be, at intervals of every ten feet, air-bricks inserted near the floor-level, immediately under the ceiling-level of the floor below, which should have on the underside perforated zinc, so that the patients should not have the control of the ventilation. Mr. Salter had not spoken of the means of escape from fire in buildings constructed on the pavilion principle, and he thought that he had omitted a very important advantage in not specifying that the flooring-boards should be tongued with iron. In conclusion, he asked whether it was an advantage to have rounded corners to the wards, as in some competitions which had come under his notice this was a feature strongly insisted upon, though why he knew not.

Mr. C. H. F. Lewes thought, on the contrary, that Mr. Salter had been very happy in the selection of his examples, but considered that to plan double wards, as suggested by Mr. Batterbury, would be to take a step in the wrong direction. He would just point out an omission made by Mr. Salter in describing the Fever Hospital at Stockwell. In that building the water-closets and bathrooms were placed midway in the length of the wards, as the wards were unusually long.

Mr. Gilbert R. Redgrave, in reference to the French systems of hospital ventilation, said he believed that French architects were in favour of artificially-warmed air being forced into the buildings by means of fans, or through channels made in the walls of the building, and that seemed to him a better plan than exhausting the air by artificially-moved screw-ventilators in shafts above. At the new University buildings at Glasgow, the air is heated by means of hot-water pipes in the basement, and this heated air is forced up by fans and enters the apartment for which it is intended through openings in the ceiling. The entry of this warm fresh air at the top of the room drives down the vitiated air to the bottom, there to find an exit. This system of ventilation, which seemed so diametrically opposed to the ordinary and natural method, had not been adopted without great deliberation, the most eminent men of science having been consulted in the matter. The reasons given in favour of this plan were, he believed, that the introduction of hot air in one place and the withdrawal of foul air in another, created very dangerous cross draughts, which were difficult to avoid; but by bringing in the fresh air at the top it was more uniformly distributed. With regard to the admission of fresh air into hospital wards, the main difficulty was to prevent a great rush of cold air. In concluding his remarks, Mr. Redgrave said he thought it highly desirable that some summary or statement of the various means of ventilation should be prepared, specifying the particular means suited for various requirements.

Mr. Rhodes having suggested that the air might be washed in some way before entering buildings, especially hospitals, to free it from dust, and that the water employed for that purpose might also be used as the motive power of small turbines for imparting rotation to fans and cowels,

Mr. Potter proposed that the names of Mr. Currey, Mr. Marrable, and Mr. T. Wyatt, who had so kindly lent the numerous plans and drawings with which the paper was illustrated, should be included in the vote of thanks.

Mr. Watson (President) said that before putting the motion he wished to refer to one or two matters dealt with in the paper. He quite agreed with most of what Mr. Salter had said; in fact, most of the points that gentleman had urged were so well established that there was no real difference of opinion upon them. On one point, however, he strongly differed from Mr. Salter, although the same point had been strongly urged by many writers on the subject. He alluded to the alleged necessity of making the walls of hospital wards of a non-porous material, and he was surprised to hear it laid down by Mr. Salter that the walls should be coated with some hard material capable of receiving a fine polish—with marble, in fact, if possible. Now, although he (Mr. Watson) had practised it himself—he had used polished Parian cement for hospital ward walls—he had great objections to it. He objected to it because with a polished surface there was no absorption, and because the moisture evolved from the atmosphere condensed upon the polished surface and streamed down to the floor. His impression was that it would be far better, instead, to construct rooms which would answer as hospital wards for a certain period of time, the walls being so constructed that at intervals more or less frequent the walls could be washed or re-surfaced. The miasma did not penetrate into the brick wall or even into the plaster, but hung upon the surface, and it would hang upon the surface of a polished wall almost as much as upon that of an ordinary wall. He thought it would be better in all large hospitals to have one more ward than was necessary, so that one was always under process of cleaning.

The Chairman having put the motion to the meeting, it was unanimously carried, and

Mr. Salter, in acknowledging the compliment, briefly replied to some of the questions raised in the discussion. With regard to ventilation, he said his opinion was that natural ventilation was, as a rule, the best, for hospitals as well as for other buildings, but of course different diseases required different degrees of temperature for their successful treatment. The warmth of the air required for fever in certain cases differed from that required in small-pox; but physicians were all agreed upon this—that whether the air came in cold or warm, there should be plenty of it. Natural ventilation was generally the best where it could be got, but there were certain cases in which it was not obtainable. You could not have natural ventilation when you were compelled to keep up a temperature above that of the external air. Were the damp, foggy air of a November day allowed to enter the wards of hospitals without being dried and warmed, it would prove fatal to many of the inmates. With reference to the Glasgow system of ventilation, referred to by Mr. Redgrave, and now being carried out by Mr. Phipson, there were revolving fans in the basement, which drew in the fresh air, causing it to pass through a film of fine cold water spray, as suggested by Mr. Rhodes, to remove particles of dust. The air was then forced upwards and entered the apartment from the ceiling, as described by Mr. Redgrave. He (Mr. Salter) thought, however, that the Glasgow principle was fundamentally wrong, inasmuch as it was opposed to the laws of nature. To force fresh air in at the top of an apartment and to drive the vitiated air out at the bottom would require a very considerable driving-down power to be imparted to the fresh air in order to counteract the natural tendency of vitiated air to rise; and surely this would cause a strong downward draught! As to double wards, his opinion was that they constituted the most injurious arrangement possible. If you put four rows of beds in a ward, you must have currents of air from one row of patients passing over the heads of another row. This plan was tried at King's College Hospital, and its failure was notorious, while in France the Assistance Publique, in writing of it, said it was one of the worst possible arrangements for an hospital. As to escape in case of fire, his idea was that all the wards should be fire-proof, and all the staircases, and with these desiderata the chances of fire would be reduced to a minimum. With regard to rounded corners, the reason adduced in their behalf was that square corners tended to the collection of dust and the impediment of the circulation of the air of a room, but he attached no importance to this. As to non-porous walls, and the Chairman's remarks thereanent, Mr. Salter said that if the walls were coated with an absorbent material, during one state of the atmosphere they would take in, and during another state they would give out. Many medical authorities on hospitals agreed in thinking that a hard polished wall was the best. He thought that the principle advocated by the Chairman would never answer, unless he removed the whole of the wall, even to the bricks, for he believed it had been shown by analysis that the miasma actually did enter the bricks.

The meeting then terminated. The next meeting is fixed for this (Friday) evening, when a paper will be read by Mr. Gilbert R. Redgrave "On the Architectural Treatment of Rubbish."

ARCHITECTURAL MATTERS IN WORCESTER.

By a Provincial Architect.

WORCESTER, possessed of a cathedral of great antiquity, has by no means the mediæval quaintness for which so many of our English cities are noted. Most of its public buildings, and a very considerable portion of the dwellings, may be said to be of, if anything, a Hanoverian type; and the streets all over the city have little of the irregular picturesqueness the visitor expects to see in a cathedral town. The cathedral itself is too well known to require description. Just now it is undergoing a very purgative course of restoration under Mr. Gilbert Scott.

There would seem to be very little house building or new building of any kind going on in Worcester, and if it be true that the local taxes amount on an average to one-half of the rateable value of the premises on which they are claimed, the dearth of new buildings is not very extraordinary. We understand that a £21 house at Worcester, rated at £18, is charged with £9 taxes. Surely there must be some need of waking up the citizens in the Guildhall, as well as the occupants of the cathedral. No city or town can be expected to prosper with such an incubus of taxation as this. It is calculated to paralyse all building speculation.

The Guildhall would seem to be an especial favourite with the citizens if it be true that, in its contemplated enlargement or reconstruction, the citizens hesitate to do away with its street façade. It is a vile Hanoverian composition of red brick and stone dressings, bedight with a profusion of sculpture (so-called) by way of niched figures of Queen Anne and the two Charles's, five figures up in the air of Justice and other attendant virtues, very ostentatiously propped up *a posteriori* with iron bars, and a sprawling pediment charged with golden-winged angels blowing gilded trumpets in honour of the five aforesaid virtues overhead, or of the three gilded sovereigns down below. Internally the edifice contains two long ill-proportioned halls. The whole thing is as uncouth, as ill-contrived, and as ugly as it well can be, and the best thing to be done will be to pull it all down and rebuild it on a better design.

Worcester is by no means rich in modern edifices of good design in any known style. Perhaps its best Greek building is the Shire Hall, a pretentious pedimented portico of six columns disposed along *the side* (!) of a bald, uninteresting court-room, remarkable for its bad acoustic qualities—or, perhaps, we should rather say, its anacoustic peculiarities. The principal Italian building is a new stone-fronted bank near S. Nicholas' Church, the details of which are as clumsy and ill-proportioned as it is possible to conceive. One excellent quality the façade has, and we hasten to mention it—good wide quoins at each angular extremity that almost redeem the other glaring defects of the design. The Corn Exchange in Angel-street is a compo and red brick structure of inconceivable ugliness, the style "Greek," and the order, if anything, "Doric," in courtesy. The citizens have just pulled down and sold the materials of their old Alhambra, and built up a new one absolutely indescribable in its ugliness.

"Elizabethan" is by no means well given in the very recently built grammar schools, adorned with a stiff figure of Queen Elizabeth in a niche. The material used (light red brick and warm-coloured stone) has an exceedingly pleasing aspect; but the architectural features are ill-proportioned and unsatisfactory.

Nor can much be said for the Modern Gothic of Worcester. The Baptists in Sansom Walk and the Presbyterians in Castle-street have recently erected large steepled churches in the style. The details of both are very unsatisfactory; those of the former building remarkably so, and the palisading and piers are atrocious. The general outline of the latter edifice is very successful, especially that of the spire, and here the wrought-iron fence and gates in front are very nicely designed. But the crown of all modern Gothic works in Worcester is surely a small stone building in the Tything (street), attached to the viaduct of the Hereford Railway. It is, let us hope, the work of an engineer, who is no architect. It should be seen to be appreciated.

One really good modern work we did see in Worcester; the model dwellings of the City of Worcester Association for building Dwellings for the Labouring Classes. It is situated in Copenhagen-street. Each flat, rented at 3s. 6d. per week, comprises a good kitchen, one large and two small bedrooms, a scullery, and a water-closet, all admirably arranged, and well worthy of the notice of the Londoners interested in the erection of such buildings.

◆

NEW ELEMENTS OF HAND-RAILING.*

(*Continued from page* 464.)

Plate 15.—Construction of a Wreath in Two Pieces—Upper Part to Form Ramp.

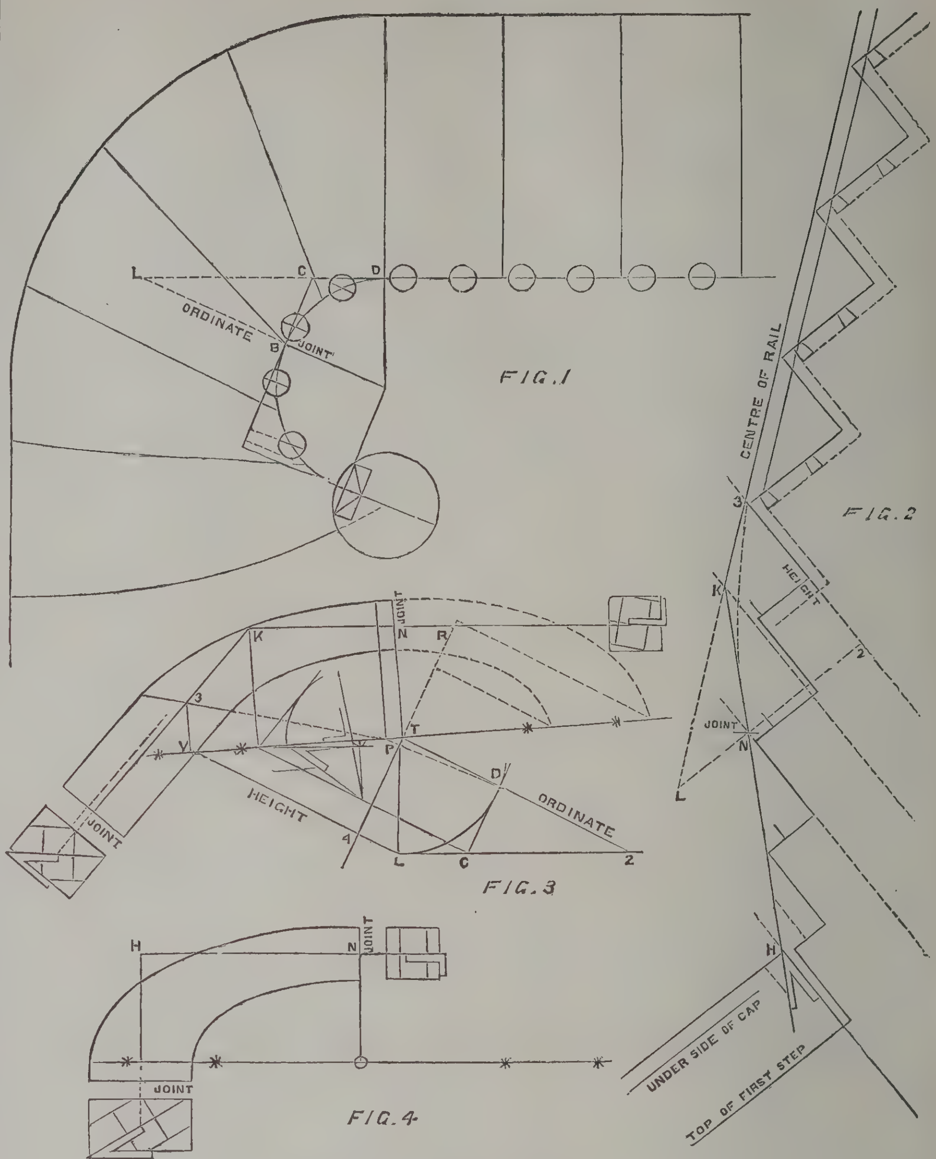
FIGURE 1 exhibits plan of stairs, starting with five winders. The riser of first square step stands on spring. The centre line of rail is struck with a 9in. radius.

It has been distinctly stated, and clearly shown on the two preceding plates, that winders connecting with square steps should not terminate on spring line. The reason is obvious—for, the narrow ends being crowded into the cylinder, naturally causes the wreath to stand on too great a pitch, and thus makes the ramp on upper part short and abrupt. These defects are more apparent on stairs having small cylinders, the wreath seeming to stand almost upright. Such an unsightly appearance can be very easily avoided by increasing the width of narrow end of winders and letting them run past spring line, in same manner as shown on preceding plate.

Some joiners like to try their hand on this kind of work, without any regard whatever to established rules. The situation of winders and general finish not being taken into consideration, causes the execution of a handrail to be not only difficult, but quite destructive of that effect which well-constructed stairs should have.

Take the plate before us as an example. It is seen at a glance that the wreath must of necessity be in two pieces. The question to be decided is, What part of the circle should the joint be made upon, so as to give the least work, and at the same time to produce the best possible effect? This point is speedily settled by simply drawing the two tangents to form a right angle the sides of which must equal the radius of the circle. This at once fixes the joint at B, and gives B, C, D as tangents for upper piece of wreath. Then the lower side of square, being extended, gives position of newel and mitre cap. Also ordinate for lower part of wreath; the ordinate for upper part being L B. This, however, remains unknown until tangents D, C, B and one side of the square are unfolded; which is shown at Fig. 2. Letters along the margin on the right correspond with those on plan. Line A represents corner of square; letter B the joint, and C the angle of tangents; while D shows the spring line. Let square steps and winders stand in same position as those on plan.

Let under side of rail rest on centre of short balusters. Set off half its thickness, which draw, cutting at K. Fix upon height of newel above first step. Assume short balusters 2-4, and newel 2-10. Now set off 6in. and draw under side of cap.



NEW ELEMENTS OF HAND-RAILING.—PLATE XV.

Next, set off half thickness of rail, cutting at H. Join H K, and we have the pitch of wreath over winders. Its joint N stands over riser B. Height and ordinate for upper piece of wreath can now be obtained by extending the line marked "Centre of Rail." Then draw through joint N, cutting at L and 2, which gives 2.3, for height, and 2 L as direction for ordinate. Let D L on plan equal it. Join L B. We have now the ordinate for lower and upper part of wreath. Then, by drawing through centre of balusters, parallel with B L, and lower side of square, to cut tangents, gives a direction to show variation in length of balusters standing under the wreath. The method being simply to transfer intersections made on tangents to that of the winders at Fig. 2, where the position of balusters is seen.

Fig. 3 shows mould for upper part of wreath. Commence by drawing any straight line, say L, 2. Let this equal corresponding letters on right. Next, square over L P. Let D, C, L equal similar tangents, on plan. Then draw ordinate through D; also lines from C and L parallel with it. Next, draw seat through P, square with ordinate. Let height 4 V equal that of 2.3 on the right. Join V T extended. This is the pitch. Complete the mould as shown. The straight wood on shank may be any length desired. It forms the ramp, and connects with the straight rail. This piece of wreath having the slabs taken off the sides is ready to thickness. Then cut off the slab from upper side of shank, clear through, and square with joint. This done, notice the corner on the concave side. It gives perfect directions to form the ramp. The square sections show joints and application of bevels. To prove the correctness of mould, see that N K 3, equal corresponding letters on pitches to the right.

Fig. 4 shows the mould for piece of wreath starting from the newel.

Commence by running a gauge-line on a board to suit mitre given on plan. Square over from any point, say O. Let O N equal one side of square on plan; and have N H to equal corresponding letters on pitch to the right. Next, find wide end of mould; also the bevel.

Return for a moment to H on the right; and set off on each side of it half the width of rail. Then draw parallel with H A, cutting pitch. The intersections thus made give width of mould; and the angle formed by pitch and line H A contains the bevel for joint, on which the mitre is made.

Observe joint N standing on the minor axis, which makes the mould on that line always equal to the width of rail, so that a square is applied to the joint, as shown. Find points to insert pins. Then sweep the elliptic curves with a string.

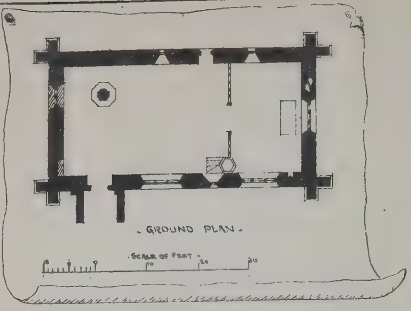
◆

THE SURVEYORSHIP OF BRIDEWELL AMD BETHLEHEM HOSPITALS.

THE Governors have issued an advertisement that they will meet on Monday the 30th of January next, for the purpose of electing a Surveyor to the Hospitals. Applications from candidates desirous of competing for the post must be sent in, accompanied by answers to a printed form, which may be obtained at the Clerk's office, addressed to A. M. Jeaffreson, Esq., the Clerk to the Hospitals, Bridewell Hospital, Bridge-street, Blackfriars (E.C.), not later than the 12th of January next. There will probably be numerous applicants. Mr. Charles Barry, Mr. Frederick Marrable, Mr. F. W. Porter, and Mr. John Young are among the candidates.

---

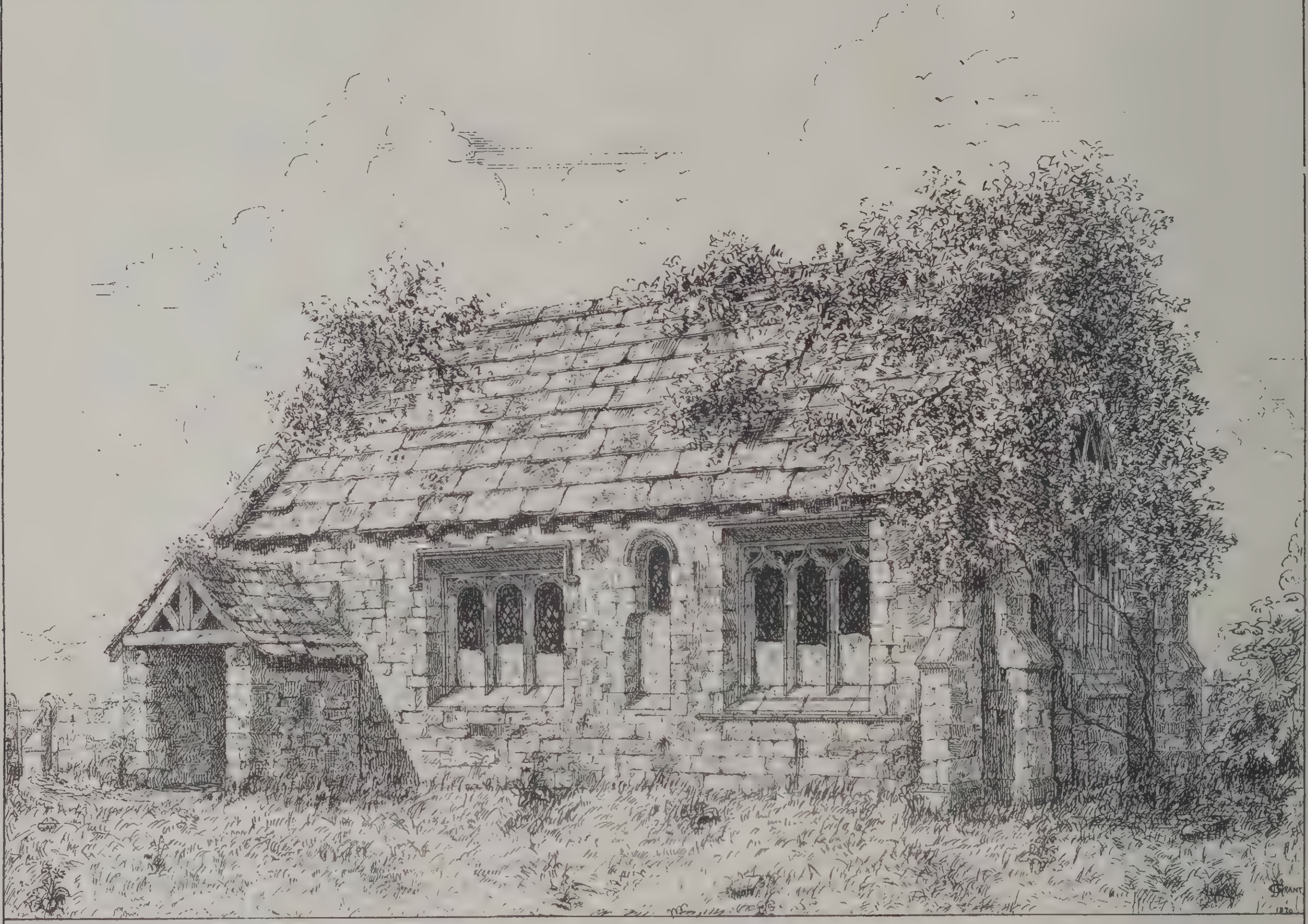
* This series of articles is a reproduction of Robert Riddell's work on the subject, published in Philadelphia, and by Trübner and Co., London.



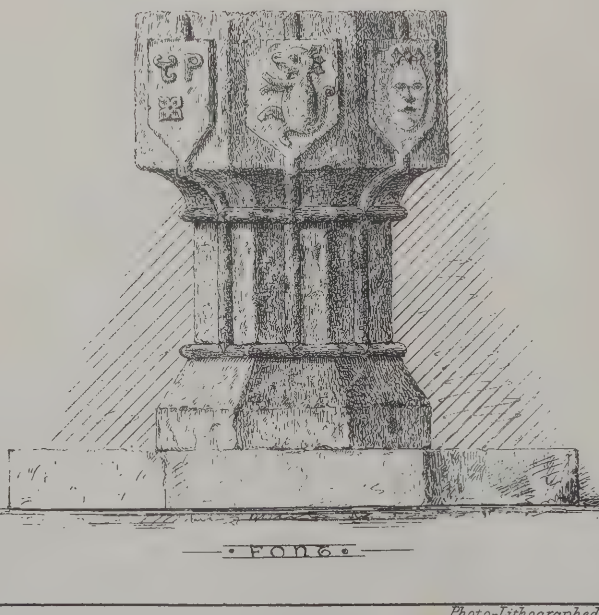
STYDD CHAPEL

NEAR RIBCHESTER

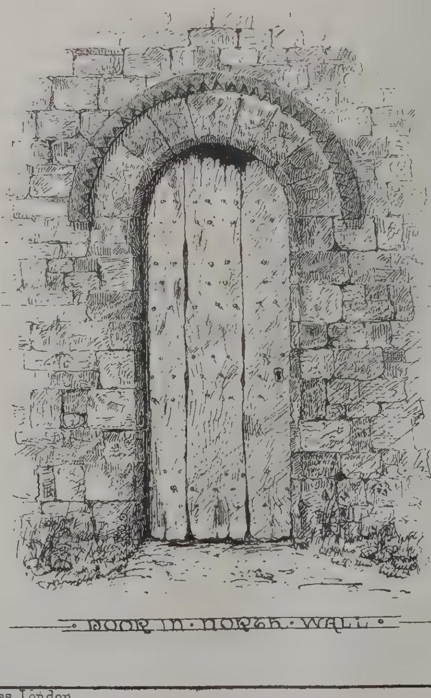
SKETCHED BY D. GRANT



SOUTH EAST VIEW



FONT



DOOR IN NORTH WALL

Photo-Lithographed by Whiteman & Bass, London.

DOOR HINGE.

GRAMMAR SCHOOL + NORWICH.

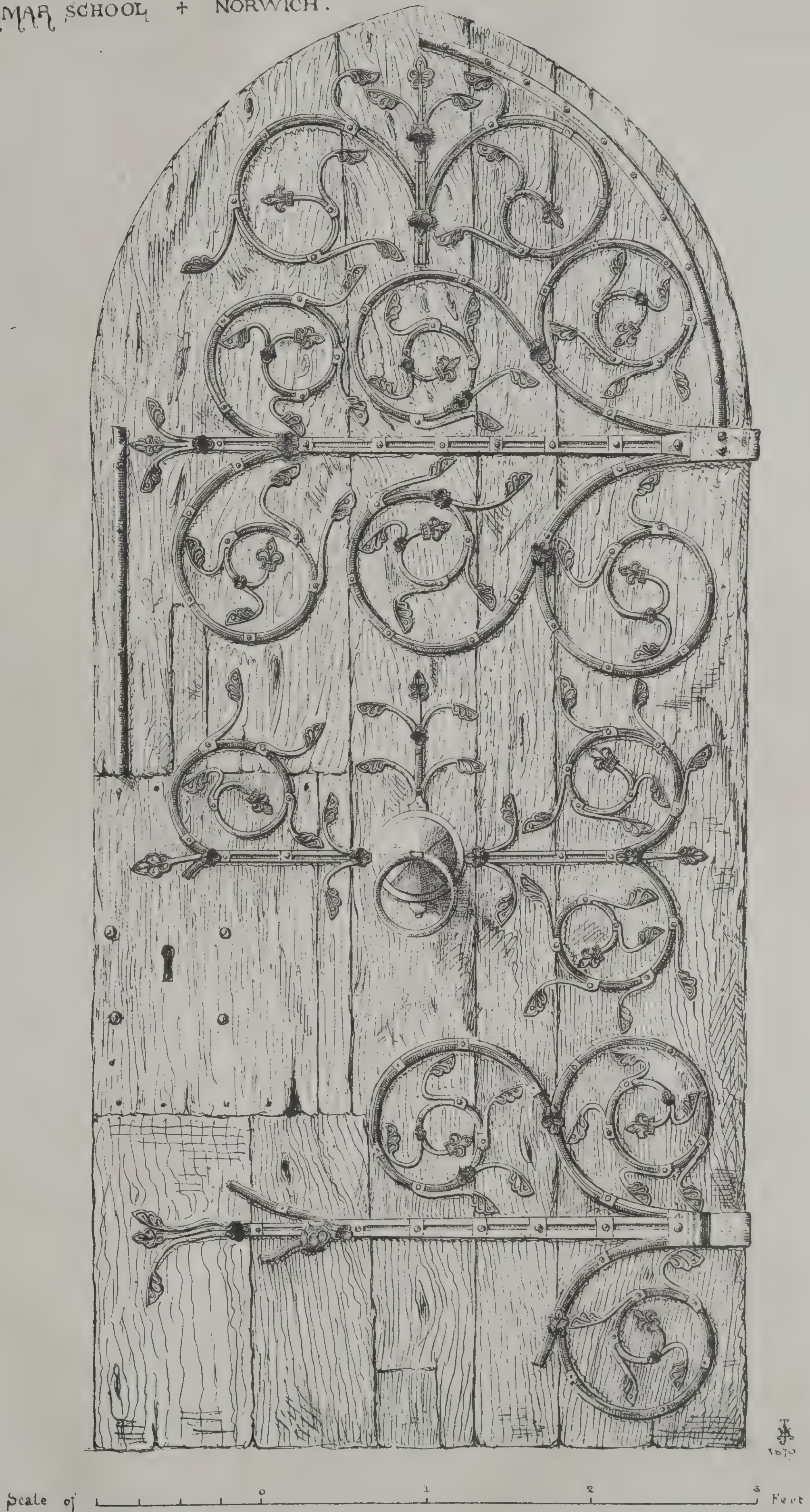


Photo-Lithographed by Whiteman & Bass, London

THEORY OF THE ARTS.

Art Education.

(Continued from page 454.)

APPLYING more practically the theory I have advanced to the fine arts, or rather those related to architectural design, I will here endeavour to define more clearly the proper order of art thought, and the relative values of those art products and labours which constitute architecture proper or architectural excellence in design. As has been well said, it is absurd to suppose that you can properly regulate education, or the process of forming and combining ideas, without understanding the nature of that process. In matter and in manner our architectural education is grievously in fault, and the wrong kind of knowledge is given in the wrong way and order while the right class of knowledge is withheld or picked up accidentally as necessity compels. Established routine has fixed upon a certain course of acquiring knowledge which places the ornamental before the useful. This is true both of our art education and of our school or general education. In the order of time it has been remarked, also, decoration has preceded dress. A clever writer on education has clearly proved the truth of this. The Orinoco Indian paints and tattoes his skin from a mere natural love of ornament, and men dress their children's minds much in the same way. There is a conventional order or fashion which has in everything and everywhere exercised a powerful influence among society of all ages and countries.

Among the ancient Greeks and Romans, no less than among ourselves, ornamental arts and acquirements have preceded the more necessary acquaintance with the fundamental laws of body and health, and the arts most conducive to the necessaries of life. The due relationship of the two elements, decoration and utility, has not as yet been properly adjusted, nor will it be so until a scientific connection and order be established and observed in our education. Of late, however, the useful has so far trenched on the ornamental as to make severe contrasts and startling discordances in our modern system of life, and thought, and art, that jar rather unfavourably with past ideas and art conceptions.

It is only of late that the idea of classifying the different kinds of knowledge has been thought of; still later that of establishing their different values correctly. A standard of relative values is much needed in our school courses, in our art schools, workshops, and manufactories; and until we get some correct estimate of the actual worths of various sorts of labour, our best energies and blood will be misdirected and misspent.

Thus, the comparative advantages of classics and mathematics is a question hardly settled satisfactorily, while our pupils and students of various arts are left to follow the bent of their personal predilections in determining what amount of their time and thought is to be spent in the study of this or the other subject of their particular vocation. There is, then, clearly a necessity for a standard of relative values, as I have hinted in the preceding papers—a standard based on actual utility as a measure of value, or some people would attach an undue value to accidental circumstances and things. Everything and every art and science has a value. Heraldry, symbolism, archæology, each is a study of value; but its relative worth is what is required to be known and decided. The proportion between the time and labour needed to acquire a certain knowledge or thing, and the result as a beneficial result of value, must be considered in estimating such a standard. As I have said, a complete preparation for an architect—one preserving the due proportion of the faculties and knowledge necessary—is an ideal case, but a proportionate scale, or degrees of preparation in them, is attainable, and should be acquired by every student and practitioner. Again, the value of a fact or order of facts may be either actual, intrinsic, or relative; thus the knowledge of a fact necessary to physical wants or the senses of the body must take precedence of facts relating to particular times and places, and which are only useful in connection with such accidental properties. Hence the absolute truth should come in value before the conditional, limited, or contingent fact. The truths of most sciences, the abstract sciences especially, are of unconditional value; while knowledge, such as historical and archæological facts, or those dependent or limited in their application, however useful, ought to rank second in our acquirements. In the curriculum for an architectural education, for example, the inorganic sciences should come before the organic; the properties of bodies in their physical aspect should be studied first; their accidental combinations as regards time and space afterwards; thus chemistry and mechanics should precede geology and mineralogy. In the abstract sciences, in the same manner, the simple properties of form and quantity should be studied before and with greater care than rules and formulæ expressing complex relations and generalisation of truths. Indeed, the order in which the sciences have been evolved is the right and only natural process to be followed in their study—namely, that the concrete should precede the abstract, the simple the complex, the indefinite and empirical the definite and rational. The stages of evolution of our faculties will thus be in correspondence with the steps of our curriculum, and a normal amount of ability and energy will be sufficient to achieve a far better result than the unnatural course usually adopted by repetitions of forms and conventional methods forced upon the mind.

It is acknowledged by the most profound writers on education that there is more of self-regulation in things than was imagined under an age of scholastic thought, when everything was to be prescribed by rule or law, even to the value of money, and that the mind had only to be made by the schoolmaster. Herbert Spencer, Professors Tyndall, Faraday, Huxley, Wyse, and others, have clearly demonstrated the fallacy of these now empirical notions, and that there is an order and a place for everything, if the self-evolution of the mental faculties is allowed to indicate a process or to regulate instruction. There is much more to be accomplished by self-education than even at the present day is acknowledged. The individual activity of the brain is of much greater influence than any system of prescribed instruction, the main and only use of the latter being to discipline and regulate. The fact, indeed, is placed beyond dispute by the many instances of self-taught men, and the observed want of original thought and power in men who have stood foremost in our schools and universities. An inquiry into the cause of this failure in the results of prescribed studies leads us at once to regard the mind as an unwilling task-taker, as something to be interested by a course of pleasurable instruction which cannot fail to call forth and develop the faculties instead of repelling them.

It is this self-evolution in the mental process, then, that should be assisted in our system of instruction instead of thwarted. Simple facts and conceptions, learnt in the normal manner here shown, aid the successive steps of the mind in solving further problems by presenting materials for conclusion. Not so the ordinary course pursued, where the generalised idea is conveyed to a mind ignorant of the facts and premises constituting such a generalisation. As the mind developes, a similar development or progression from observed facts and inferences to abstract propositions is the course to be taken in every branch of instruction, beginning with the useful, the simple, the homogeneous, and ending with the ornamental, the complex, and the heterogeneous. Everything and every idea must then fall into its proper order and value, and we should not see so many of those conflicting and contradictory conceptions which we now continually are meeting with in our practical life in thought and art.

We have seen, then, that the relative values of knowledge are in a natural sequence or accord with mental evolution—the most necessary and absolute truths and facts being taught and received first by Nature herself; and further, that such a definite law of progress has been the invariable law of civilisation in its outgrowths of art, religion, and philosophy. I will, in my next, more specifically allude to some of those sciences and arts which should form the primary instruction of the artist of design and construction.

G. H. G.

MONUMENTS OF ART.

IT becomes every day more evident that only a systematic study of the history of any branch of science or art will serve as a firm basis for progress. The French and Germans have long acted upon this principle, and we can find no other reason for their general superiority over us in matters of art but our disregard of the study of art history. We may congratulate ourselves on the fact that the authorities at the Science and Art Department, South Kensington, have recognised the importance of this much-neglected study, and supplied the students with regular lectures on the history of art. On the other hand, the want of those excellent and cheap illustrated works which serve the student abroad as guides in this study has long been felt. To meet this want, we shall furnish the readers of the BUILDING NEWS with a series of systematic illustrations, commencing on the 6th of January, 1871, under the title, "MONUMENTS OF ART." The illustrations will be taken from the excellent works of Drs. Kugler, Merz, and Lützkow, and Professors Guhl and Lübke, and will serve as an atlas, showing the gradual development of Art amongst the different nations, and the influences of the various styles, chronologically arranged, from the earliest to our own times. The text will be by Dr. G. G. ZERFFI, Professor of the History of Art at the Science and Art Department, who will explain in a lucid and concise manner the illustrated objects. When the series is complete, it will be found one of the most compact and at the same time one of the most elaborate works on Architecture, Sculpture, and Painting, ever published in this country.

BUILDING NEWS SKETCH BOOK.

DOOR HINGE, GRAMMAR SCHOOL, NORWICH.

EDWARD VI.'s school, better known as the Grammar School, consecrated to S. John the Evangelist, was begun about A.D. 1315, by Bishop Salmon, and was probably at first only intended to be a carnary or receptacle for human bones, but as the work proceeded it was resolved to add the chapel, which was constructed over the original carnary. Both the crypt or "lower chapel" and the "upper chapel" were consecrated, and in both masses for the dead were said, and other services performed.

Walter Le Hert, who, in the twenty-six years of his episcopate (1446—1472) added more to the splendour of the cathedral than any of his predecessors, conceived the design of adding a porch to the west end of the building. The access from the first must have been very defective, and like all places which have been the result of an alteration of the original plan, the entrance was mean and awkward.

The door illustrated forms the means of communication between the porch and chapel, and is built in the original wall; the arch is well moulded, and in good condition. The iron work on the lower part of the door has suffered considerable damage, and only two small pieces remain of an iron beading which originally went all the way round.

A. JNO. LACEY.

STYDD CHAPEL, NEAR RIBCHESTER, LANCASHIRE.

RIBCHESTER, in addition to the interesting fact of its being selected by the Romans for one of their northern stations, and attractive to the antiquary by the many and rich varieties of Roman remains to be found in the immediate vicinity, is also of interest to the student of architecture, as having in its neighbourhood the ancient church or chapel of Stydd. This little edifice is the oldest entire church in Lancashire, being one of the earliest institutions of the Knights Hospitallers, erected about the early part of the twelfth century, and intended to form a convenient place of devotion for a retired monastic establishment.

It is situated in the midst of a desolate-looking "croft," and although not very striking to the ordinary passer-by, an air of venerable antiquity is nevertheless present, and is heightened by the profuse and luxurious mantle of ivy, which seems to hold a strong possession over the walls and roof, aye, even to a forced entrance into the church through the east window, where it droops in graceful festoons over the altar. The walls of this ancient church are composed of a durable grey grit sandstone 3ft. in thickness. In plan it is a simple parallelogram, 46ft. × 21ft. internally, without aisles, having neither tower, turret, nor belfry.

The principal doorway, hid by a rude-looking porch, is at the west end of the south wall, and in proportion, contour of mouldings, and capitals is a fine specimen of the Transitional Period. Another door, shown in the illustration, and supposed to have been for the priests' use, is in the north wall, and is of an early Norman character. The window in the east gable has three lights, of fine proportions, lancet-shaped, and without cuspings. There is also a two-light window of the same simple character in the west gable. The long and narrow description of window between the two large windows in the south wall is very peculiar, and seems to have been designed and employed for other uses than that of merely admitting light and air. The north wall contains two windows of an equally early date with the "priests'" door before mentioned, and similar in simplicity of design and detail.

The roof is open and composed of massive oak timbers. There is no reading desk, the ancient oak pulpit standing on a rude stone base. The chancel is separated from the body of the church by an oak screen of simple design; and in place of an altar there is an old oaken table, rude as a cottager's "dresser." The ancient octagonal font has curious heraldic or other sculptures on each of its faces, some of the arms being those of the Knights Hospitallers. Within the chancel are some ancient tombstones, and grave crosses of chaste design and delicate workmanship.

Service is celebrated in the church once a month. D. GRANT.

◆

ON THE HISTORICAL DEVELOPMENT OF ORNAMENTAL ART.

DR. ZERFFI delivered the eleventh lecture of this course on Tuesday week last, in the South Kensington Museum Lecture Theatre. He commenced by observing that in treating art from an historical point of view, the study of the geographical position of a country and the ethnological elements of the inhabitants was of the utmost importance. In taking up Greek art we had to deal with that link which connected prehistoric and monumental art; the myths and mode of thinking of the far East and of the traditional period with our own modern art and intellectual standing. The branches of art which we had had under consideration up to the present were more or less mere curiosities. They had served to prove that the dynamic force was ever active in mankind, and produced analogous forms of ornamentation, buildings, palaces, and temples, but this force had been nowhere counterbalanced by the principles of symmetry, eurithmy, and proportion. In Greek art, however, this balance had been attained. Though our museums much resembled battle-fields after a long and well-contested strife, being full of disconnected sculptured fragments, such as heads, legs, hands, torsos, and disfigured faces, we could study from these remains a well-systematised development of art, which had reached, as far as architecture, the ceramic art, and sculpture were concerned, the very *acme* of perfection. According to Plato, the Greeks had settled round the sea like ants and frogs round a marsh. This comparison, though not flattering, characterised the geographical position of the ancient Greeks. The sea was the Mediterranean, on the shores of which three great civilisations had developed themselves—the one (commercial) with the Phœnicians, the other (theocratic) with the Egyptians, and the third (artistic, poetical, and philosophical) with the Greeks. Water was often looked upon as a separating element, a natural frontier, but this was a mere arbitrary assumption. The more we studied history the more surely should we arrive at the conclusion that rivers, lakes, and seas were, in reality, uniting elements. The contiguity of water to a country incited the inhabitants to enterprise, led them to think, and aroused their curiosity as to what was beyond. Prompted by such feelings as these, men had explored the world, and settled in distant parts, and thus a magic link had been forged by an interchange of ideas, wares, customs, and manners. The Mediterranean sea was the pronaos to the European temple of science and art. On its shores the various nations assembled, and laid the foundations of a structure destined to last through all time. The advantages of a variegated geographical position were greatest in the Peloponessus, which might be called the grand entrance gate to the north-western stage of the world's history. In this place, we should see that a civilisation and an art had developed, becoming models for all other ages to copy, and no doubt retaining their supremacy so long as taste in art should exist. Comparative philology had taught us that there must have been a period during which the Indians, Persians, Teutons, Celts, Greeks, and Romans spoke the same language. These nations belonged to one race, having as distinguishing characteristics a facial angle of ninety degrees, and, on an average, ninety-two cubic inches of brain. There could not be the slightest doubt that the Greeks were Aryans. Some of the Aryan tribes settled in the Peloponessus at a very early period. This district formed originally a portion of a greater continent which (according to Diodorus) subsequently sank beneath the Ægean Sea in consequence of some natural convulsion. This convulsion was said to have formed the straits of the Euxine, and to have broken up the continent round the Mediterranean, uniting that sea with the Atlantic ocean. The first settlers in Greece were the Pelasgians, a name derived from the Greek word signifying the sea, and used indiscriminately to distinguish all persons coming from the sea. They were followed by the Cyclops, or heaven-gazers. Both these tribes came from Asia Minor. Whether they settled before the Ægean Sea buried a portion of the European and Asiatic continents, or at a later period, was a point difficult to decide. It appeared that they had been an agricultural people from time immemorial. Of their walls we had those of Tirynthos, of Cyclopean construction. The stones were roughly laid one upon another, and the interstices filled up with smaller ones. Some of the larger stones were 11ft. long. The walls were, on an average, 25ft. thick, and were provided here and there with passages and openings. We next had those of the Castle of Mycenæ, and they showed an immense progress. The castle had been the seat of Agamemnon. The walls were constructed of polygonal stones, well cut, with sharp edges, well fitted to one another, without the use of smaller stones to fill the crevices. Still more perfect were the walls of the old town of Buphagos. The polygonal blocks were so arranged that they began to form regular horizontal layers, whilst the Cyclopean walls of Psophis were perfect constructions of square blocks, disposed in regular horizontal layers. The Pelasgians and Cyclops had been followed by the Hellenes, who received that name from Deucalion's son Hellen. They belonged to the mythical and heroic period, and had already attained a high degree of civilisation when they settled. In them was exhibited the Oriental love of splendour, balanced by a feeling of sterner regularity. The town Sipylos (of Cyclopean construction) had been the principal seat of the Tantalides. This tribe was of Aryan origin, as were also the Atlantides; they were both well acquainted with astronomy. The descendants of Heracles had next appeared; they were of Assyrian origin, and passed through Lydia into Greece. These had been followed by the Dorians, who came down from the northern mountains of Greece. In these Dorians we could trace a deeper sense of beauty, for they were earnest, manly, and solemn. Their temples had been the very reflection of their primitive religious simplicity and their social and political organisation. The Doric immigration had taken place eighty years after the destruction of Troy. From this time the name of Pelasgians disappeared, and Homer speaks of the Greeks as Achæans, Danaï, and Argives only. We should find that Greece had been influenced by various immigrations to a very great extent. A colony from Sais had settled down in Attica, founding Cecropea, from which spot, said Cicero, knowledge had spread into the whole world. In the year B.C. 1493, another colony from Phœnicia, under Cadmus, had arrived. From the leader of this colony the Greeks learnt sixteen letters of their alphabet. Next Danaos introduced milder customs, and finally Minos, who settled on the Island of Crete, cleared the seas of pirates. In Crete had also lived Dædalus, who was said to have wrought for Ariădne a dance in metal, which formed the model for that worked on the shield of Achilles, by Vulcan. The Greek word "to embellish," which is derived from the name of Dædalus, led us to consider him the founder of Greek ornamental art. We could observe in these different immigrations, in the different names of the tribes and their leaders, a wholesome variety of influences. Orpheus from the extreme north, Cadmus from the west, Cecrops from the south, Minos and Dædalus, had taught the Greeks music, writing, architecture, law, and ornamentation respectively. The lecturer having described the geographical characteristics of the various portions of Greece, said that in studying the influences of climate on art we by no means laboured in vain. We should do so with a purpose, that purpose being to make up artificially that which might have been denied us by Nature. In our foggy climate we need not despair; it became our duty to create for ourselves, by means of deeper study and a higher intellectual development, a kind of ideal sunshine. The power was within us, and we had only to cultivate and use it to conquer the difficulties presented by a moist atmosphere and a leaden sky. The difference would be that whilst the Greeks produced genial works of art under the influence of a sunny sky, we should have to produce our works under the influence of a bright and cheery intellectual atmosphere. And the latter, if we but knew how to manage it, was by no means less powerful than the former. We had only to employ those faculties which God had given us in order to acquire that which we imagined had been a speciality in the case of the Greeks, who in art, poetry, and science had done everything well, and had known so many things apparently by intuition—apparently only, for we should trace the thick sediment from which slowly, by degrees, and with infinite labour, the magnificent structure of Greek development was built up.

In conclusion, Dr. Zerffi announced that the next lecture of the course would take place on January 17, 1871, when he will take the mythology of the Greeks as his subject. As the interval between now and then was a fortnight longer than originally contemplated, for the first two weeks of the resumption of the lectures there will be two lectures per week, in order that the course may end at the proper date. The next four lectures, therefore, will take place as follows:—Lecture XII., Tuesday, January 17; Lecture XIII., Friday, January 20; Lecture XIV., Tuesday, January 24; Lecture XV., Friday, January 27, from three to four p.m. each day, after which the lectures will proceed as usual every Tuesday afternoon.

◆

THE MONT CENIS TUNNEL.

THE year 1870, which is fast leaving us, has witnessed the accomplishment of another great engineering work. The boring of the Mont Cenis Tunnel is at last completed after fifteen years' labour. The disadvantages under which the engineers worked have been many. No shafts could be constructed, as in shorter tunnels, and consequently all the rubbish had to be conveyed to the entrances of the borings. The length of the tunnel is seven miles and three-fifths, and the width twenty-six feet and a quarter. The workmen, who commenced at both ends, with the Alps between them, have met exactly in the midde of the tunnel, and now, in all calculations of railway transit, the Alps may safely be left out of consideration. Passengers may, on the completion of the work, go from Paris to Milan without changing carriages. Italy has nobly won her place by this work by the side of France and England, for the boring of the Mont Cenis Tunnel, if it does not excel, must at least rank equal with the laying of the Atlantic Cables and the completion of the Suez Canal.

ANCIENT IRISH ARCHITECTURE.*

MR. ARTHUR HILL has soon followed up his former folio work on the Cathedral at Ardfert, by two smaller quartos, illustrating respectively Templenahoe, Ardfert, and Kilmalkedar, County Kerry. These are two very small, but highly interesting structures, and are amply set forth in the lithographs by Mr. Hill, and the photographs by Mr. Hudson, of Killarney, which accompany them. It seems extraordinary at first sight that so moderate an amount of what may be called architectural detail could render so piquant buildings which in size and form hardly surpass any ordinary barn, yet their few details tell so eloquent a tale of days gone by, and have given so much character, that architects and archæologists alike will thank the coadjutors in these works for their faithful rendering of these few ruined walls, which must soon either succumb to the adverse influences of neglect and climate, to which they have been long exposed, or else lose much of the interest they possess through necessary repairs or restoration, which may pass the bounds that necessity might impose.

Both chapels belong to a class of Hiberno-Romanesque or Celtic buildings, probably erected during the twelfth century, of which there are many specimens to be found in different parts of Ireland, not the least remarkable among which are these, which are situated in so remote a part of the country, almost the very western part of Europe.

Templenahoe appears to have been one of a twin pair of churches which were erected upon the site of the Cathedral of Ardfert before the thirteenth century. The only extant fragments of the other have been worked up in the later fabric of the cathedral, as we described in our review of Mr. Hill's work on that structure. Templenahoe, though in ruins, still remains, and is a simple parallelogram about 36ft. by 21ft. in the clear inside. It had a semicircular headed western doorway, and four very small Norman windows, one of which is perfect, and a fine, and even rich, specimen of the style, moulded and surrounded on the inside by a band of elaborate ornament, consisting of a series of geometrical figures, delicately carved, and of varied design. The quoins of the building are also effectively treated with bold three-quarter shafts, terminated by capitals all of different design. The walls are of good irregular masonry of limestone, with a few bands of sandstone to diversify the colour, and all the architectural details are of sandstone. A cornice, with hollow moulding thickly studded with beads, is supported at the angles by the shafts above named and their intermediate corbels, and is carried along both sides, and it is also returned a short distance at each end. A rich semicircular chancel arch gave access formerly to an apsidal projecting termination or altar recess, which is now, however, entirely destroyed, but the eastern wall of the nave shows where its roof abutted.

The church at Kilmalkedar is a still more richly decorated building, well built of a neighbouring freestone. It originally had a stone roof, constructed on the corbel principle, the stones being horizontally bedded and overlapping until the sides met, and were covered by a single course of flags as a ridge. A string-course marks the division between the upright walls and the sloping roof, straight on the outside, but curved gradually within to the apex. The church has now a nave and chancel, the latter being an addition at some time before Pointed architecture was introduced. Previously, the nave was terminated by a small arched recess at the east end, as Templenahoe may have been. This was only 5ft. wide, and probably, says Mr. Hill, an apse intended, in primitive fashion, to hold the seat of the priest; the altar standing out independently of the wall, as in the Greek Church to this day. The arch of this recess, corresponding to a chancel arch, is moulded and surrounded by a very effective ornament formed of a series of round discs relieved on a slightly hollow ground, and a pair of simple pilasters carry a highly-enriched member, similar in treatment to that of the inner member of the west doorway of Ardfert Cathedral. Portions of two side niches of this apse still remain.

The western doorway is a good example of its class, semicircular-headed, and of two orders, with nook shafts; it is surmounted by a label moulding with carved heads; the tympanum is filled up with a plain slab of stone.

The interior of the nave is curiously decorated with a series of half-round shafts that divide the side walls into panels below the curving of the roof. Only two small Norman windows give light to the interior, one on each side opening into the second panel from the eastern end of the nave. They hardly contain a foot of glass apiece, and are unmoulded, splayed on the inside, and were not provided with glass or shutters. The chancel, though stone-roofed as well, differs much from the nave in detail, though still of the round-arched period. The east window, instead of being a simple opening with sloping jambs, has parallel jambs moulded outside, and much higher in proportion to its width; and the quoins differ from those of nave, being plain instead of having buttresses.

Altogether these two tiny structures contain as many points of interest and even beauty as many much larger ones, and we are thankful to Mr. Hill and his friend Mr. Hudson, for the complete manner in which they have illustrated them.

---

* "Ancient Irish Architecture." Published by the Author, Arthur Hill, B.E., A.R.I.B.A., 24, Keppel-street, London.

◆

THE TOMB OF CHARLEMAGNE.

AT the last meeting of the Royal Institute of British Architects, on the 19th inst., **Professor Donaldson** read an elaborate paper, illustrated by several drawings and plans, "On the Mystery of the Tomb of Charlemagne, and the Researches made of late years to discover its actual site in the Cathedral of Aix-la-Chapelle." The learned Professor, after some introductory remarks, proceeded to describe the strange fortunes which had attended the depository in which lay the body of the greatest warrior of the Middle Ages, the Emperor of Germany and France, Charlemagne. Many will exclaim, "Oh, we know where it is, in the Dome of Aix-la-Chapelle, under the large slab with the inscription KAROLVS. MAGNVS." Such would, possibly, be surprised to hear that not a trace of the sepulchral vault is to be found throughout the area of the cathedral; and that the slab with its inscription is an apocryphal act of the French Bishop of Aix at the beginning of the present century, and most probably *not* over the spot where he was buried in his royal crypt. Professor Donaldson then went on to give a sketch of the personal appearance, the extent of rule, and the circumstances connected with Charlemagne's death and burial, in the course of which he said that at Aix-la-Chapelle, during the last years of his reign, Charlemagne erected the mortuary chapel or cathedral in which his remains were to be interred; and to give it the utmost sanctity he built it in a circular (or rather polygonal) form of plan, to coincide somewhat with the traditional Holy Sepulchre at Jerusalem.* It was consecrated in the year 804, by Pope Leo III.

The full understanding of the plan of this building is necessary to the comprehension of the circumstances to be presently alluded to. The church had a large open projecting porch, forming the entrance, flanked by two circular towers, in which are ample staircases. The centre consists internally of an octagon with an arched aisle all round, and on the further side, opposite the entrance, was a square sacellum or sanctuary, or altar recess, of no great size, being only 16ft. square in the clear, and square in plan. Such is the general disposition of the original fabric, as is evident from the bas-relief in a panel of the later shrine, where the Emperor is represented offering the model of his church to the Virgin. The sacellum, or altar recess, and a portion of the external wall adjoining, were, in the thirteenth century, or about four-and-a-half centuries later, pulled down in order to form an entrance to a choir, or kind of Lady chapel, then built as an addition. The inside has a lower range of arcades forming an aisle, above which is a gallery all round forming a second tier, the arcades being filled in with slender columns.* Above is a clerestory with windows, surmounted by an octagonal dome. The diameter of the centre octagon seems to be 47ft. 6in., or half the width between the outer walls of the polygon, which is 95ft. in diameter in the clear. The total height, from the floor to the apex of the dome, is about 105ft. In front of the western, or main entrance, there was a square fore-court, anciently called a "Paradis," with porticoes and side halls, and facing the entrance were dwellings for the priests, similar to the arrangement of the Old Basilica of S. Peter's at Rome, then existing, and there was a passage uniting the imperial palace with the church. Such were the general architectural arrangements of the building, the exterior of which was probably of a plain simple character; but the interior was profusely enriched with Roman† mosaics, like those of Ravenna and other churches of that period, which covered the plain faces; and there were handsome bronze doors, panellings, and gratings, as shown in Weerth's work. The mosaics, however, have disappeared, and the interior presents the aspect of a degraded period of art. Eginhard, in the life of his father-in-law, Charlemagne (c. xxxi.), says he was buried in this building on the same day that he died, and a gilt arch was built above the spot, with his statue and the following inscription:—"Under this is placed the body of Charles, the great and orthodox Emperor, who nobly enlarged the kingdom of the Franks, and happily ruled 47 years, &c." There are one or two circumstances connected with this interment which are remarkable. The short interval that occurred after his death, caused, perhaps, by the state of decomposition of the body, rendered dispatch absolutely necessary, although his son and successor, Louis the Pious, was in Aquitaine, many days' journey distant. It seems, therefore, probable that the body was provisionally deposited, possibly in the sacellum or altar recess, with the arch over it to indicate its position. The King Louis, when he arrived, had a proper place for the tomb carried out, as his historian, Nitard, states. Ademar, in his "Historiarum," libri II., c. ix., apud Pertz Monum. SS. IV., p. 118, described, towards the beginning of the eleventh century, the appearance of the royal sepulchre.

From this description it appears that the sepulchre of Karolus was in a subterraneous chamber, in a vault, where the Emperor was seated on his throne; and a monumental part of the golden arch was in the church above ground with the inscription given by Einhardt. Mons. Arendt considers that this latter portion disappeared at the end of the ninth century, in consequence of the invasion of the Normans, who, in 888, took possession Aix-la-Chapelle, and reduced to ashes the palace of Charlemagne, which remained in ruin eighty years, until the time of Otho the Great. According to the chronicle of Hermann de Reichenau, the interior of the church was devastated and used as a stable by the Normans. In the beginning of the tenth century the palace and the church were restored, and in 936 they were used for the consecration of Otho the First. The visible part of the tomb, that is the arch, was not restored, and the sepulchral crypt had been forgotten; for when about the year 1000, the Emperor Otho III. wished to visit Charlemagne in his tomb, no one knew where it was. He himself directed the operations for its discovery, and one of the great dignitaries of his court narrates the result (Cron. Novaliciense III., 32 ap. Pertz).

The body of the great Emperor remained in his tomb for 165 years from the time when Otho III.

---

* In plan, section, and decoration it resembles the Church of S. Vitale at Ravenna, following a type generally adopted at that epoch of Byzantine art. Both of them have been disfigured by plaster work in succeeding ages.

* Rondelet, Vol. I., p. 254, mentions four columns of red oriental granite in the Salle d'Apollon of the Louvre, as having come from the tomb (or rather sepulchral church) of Charlemagne, at Aix-la-Chapelle; they are about 16in. in diameter, and 11ft. 6in. high; they were taken away by the French in 1794, as also the rest of those in the arcades of the galleries; the latter, however, were restored to Aix in 1815, but were never replaced, and now lie about neglected.

† Eginhard mentions also gold and silver, with candelabra and marbles and columns brought from Rome and Ravenna, which could not be procured from elsewhere.

had visited it, A.D. 1000, until the time of the canonization of Charles, in 1165, by Pope Alexander, by whose will and mandate, in the presence of the Emperor Frederick, or Barbarossa, the bones of Charlemagne were taken up with the utmost reverence from the spot where they had been 352 years. They were then honourably placed in a magnificent coffin* by Reinald, Archbishop of Cologne, and Alexander, Bishop of Liege, and Charles was canonised and proclaimed a holy Confessor. Fifty years after, according to Reinald of Liege, the body of Charlemagne was placed in a more magnificent shrine of gold and silver, which was begun in the time of Barbarossa, and completed in that of his successor Frederick II. in 1215, and securely closed by that Emperor himself with great ceremony. Then was added by the town, and finished (1355-1414) a new choir, either to meet the increased necessities of public worship and crowded pilgrimages caused by the canonisation, and for which the original octagon was inadequate, or to carry out the greater cult to the Virgin Mary, as is evidenced also in many of the cathedrals and abbey churches of our own country, by the Lady Chapel extension at the east end. This increase corresponds in every particular structurally with that of the Temple Church in London, where the old Norman circular church has the early pointed elongations, so that the original western portion forms, as it were, a narthex or vestibule to the quadrangular area used for the services. In the Aix-la-Chapelle addition, the eastern end is very effectively developed or expanded into a circle, forming a species of more glorious sanctuary for the altar, and upon it was placed the shrine with the relics of the sainted Emperor, which remained there during five centuries. It was opened in 1481, on October 12, upon the earnest application of Louis XI. of France, who, in honour of the Virgin and Charlemagne, inclosed one of the arms in a golden case weighing 28½ marks of gold. After this all memory of the remains of Charlemagne being contained in this shrine seems to have passed away, and the magnificent depository was supposed to contain the body of S. Leopard, martyred under Julian the Apostate, and whose body, imagined to have a greater odour of sanctity, had been transferred from Otricoli, near Rome, to Aix, and deposited in the Basilica of Aix, in the time of Otho III.: and thus the martyr had usurped the place of the sainted Emperor in the estimation of the worshippers. In fact, so utterly had the imperial remains been forgotten, that when, about 1780, the ancient altar of the choir was pulled down and replaced by another in the style of the "Renaissance," the shrine with its precious contents was placed in a sacristy of the church, where its other sacred treasures are kept. The tradition alone remained of the centre of the polygon being the site of the tomb, and a stone was placed to mark the spot at the beginning of the present century. The more recent publication of many chronicles and other authentic memorials of the Carlovingian epoch, drew the public attention to a more thorough study of all facts connected with the reign and person of Charlemagne; and Professor Bock, of Brussels, more particularly took up the question from the year 1837 as to the tomb of the great Emperor. His researches attracted the notice of the late King of Prussia, Frederick William IV., who directed steps to be taken to discover the original sepulchral crypt. Excavations were accordingly made in the atrium of the church, and on the right-hand side of the aisle of the octagon, there were found various coffins, among which was that containing the body of S. Leopard. In the centre of the octagon, where the body of Charlemagne had always been supposed to be deposited, were discovered the remains of a Roman water-conduit, rendering it doubtful whether it was possible for any crypt ever to have been there. With regard to the tomb of Charles the results were negative. But the inscription on the coffin of S. Leopard led to the conviction that the magnificent shrine, supposed by popular belief for so long a period to contain the remains of that saint, must be the depositary of some other precious relics. On the 7th of August, 1843, the shrine was opened in the presence of a deputation of the chapter and two physicians, and inside was found a parchment reciting in most formal terms the fact "*ad futuram rei memoriam*" of the opening of the shrine in 1481, the abstraction of the right humerus, and its being incased in gold by Louis XI. Underneath was a tissue of purple silk of great beauty, enveloping bones forming a complete skeleton, with the exception of the skull, the upper right arm, and a tibia, which are now in the treasury of the Basilica, and thus were recognised the true remains of Charlemagne. These excavations produced no evidence as to the sepulchral chamber, and the curiosity of archæologists and antiquaries had not been satisfied. In 1861 these researches were renewed with the permission of the Government, under the superintendence of his Excellency Baron d'Olfers, and the direction of the architect of the cathedral, Herr Zweiner, both of them honorary and corresponding members of the Institute, assisted by the town architect. They first dug down to depths varying from 8½ft. to 11ft. in every direction, under the centre and to the right and left. They found masses of solid masonry 2ft. thick running in various directions, not in the axis of the buildings, and some stone coffins, but no evidences of a crypt or vault, or hollow space. There were traces of construction apparently antecedent to the Basilica, probably Roman, foundations of the original construction in and next the old choir, and cut away to receive it, and at 11ft. deep a spring of water. It hence apppears probable that the original sepulchral vault was destroyed when the body of Charles was taken up in 1163, about three centuries and a half after his original interment, and the hollow filled up so as to leave no trace of any previous interment, and this may possibly have been necessitated by the fact that in order originally to gain sufficient height for the vault, the platform over it, on which the altar stood, may have been raised perhaps a couple of feet above the general level of the floor, with steps up to it from the aisle in front. Hence, to have a level floor from the octagon to the new Gothic chapel or choir, this must have been removed. Upon consideration of all the facts, the professor said his own impression was that, in conformity with the practice of that and subsequent periods of mediæval religious observances, the body of Charlemagne was originally preserved in a vault built under the high altar in the square recess at the east end, now destroyed, but between the central octagon and the new choir. It was anciently the custom to place the bodies of saints, martyrs, and other eminent confessors of the faith and founders immediately over or under the altar, in front or as close to it as possible. Thus, in the Basilica of S. Ambrogio at Milan the altar has a baldachino or canopy over it supported by four columns, and on the top of the baldachino is placed the shrine of the saint. At the cathedral in the same city, the body of San Carlo is superbly entombed with its silver coffin in a crypt under the high altar, a very frequent arrangement in Italy. And throughout that country are instances of the very altar itself being a sarcophagus, occasionally with a crystal front, exposing the very mummy corpse of the saint. In our own land the shrine with the body was often behind the altar-screen in a special sanctuary, where the pious might worship the sacred remains at all times and in greater numbers, as in Westminster Abbey, S. Albans, Canterbury, Winchester, &c., &c. Consequently he did not think that the body of Charlemagne could have been deposited in the centre of the octagon, for independently of the evidences "*in loco*" to the contrary, it is too remote from what was and is considered the most holy part of the sacred fabric, particularly when when we regarded him as the ruler over so vast a portion of Europe, the sanctity attributed to him as the Defender of the Head of the Church, which was confirmed by his subsequent canonisation, and as the founder of the cathedral. Therefore, he apprehended that it was under or immediately before the altar that his body originally was preserved, and only removed when in the time of Otho III. he was canonised, and the more recent choir was erected to give greater splendour to the worship of the Virgin, and necessitating the transference of the remains of the sainted monarch to a more befitting receptacle and reliquary of that period, in order to place them over the new altar. In conclusion, the learned professor detailed many interesting circumstances connected with the structure of the depositary of Charlemagne; but these must be passed over for want of space.

The thanks of the meeting were, on the motion of Mr. Jennings, seconded by Mr. Charles Barry, accorded to the professor for his interesting paper, and it was announced that the next meeting would take place on Monday, January 9, 1871, when Professor Ansted will read a paper on the selection of building sites.

◆

WORKMEN'S DWELLINGS IN GLASGOW.

A CONTRIBUTOR to the *Glasgow Herald*, in a paper headed "Rambles at the West End," dwells at great length on the building operations at present in progress at that end of the city, and we are glad to see that a large number of dwellings for workmen have been erected, or are in course of construction. The writer says:—"A few years ago a green park extended from North Woodside-road to the Round Toll-house in Garscube-road, but since then it has become the site of new streets, and is almost built up. The tenements forming the outside of a semicircle opposite the old toll-house, where 'Garscube Cross' is now located, are of a very fine description, and consist for the most part of two rooms and a kitchen, with shops underneath. In the other streets rooms and kitchens prevail, so that the working classes in this busy locality have received very considerable additions of late to their house accommodation. Mr. John Duncanson is the builder, and he seems to have taken every precaution to insure cleanliness and proper ventilation. The closes and back-yards are laid with asphalte, and as a consequence they are easily swept. In fact, the idea of leaving a small green at the back of thickly-populated tenements is worse than useless in a practical point of view. The green is soon trampled into a puddle, and worn into holes or receptacles for filth, and thus a nuisance is created where a privilege was intended. On this property Mr. Duncanson has erected about 220 houses of one room and a kitchen each; 39 of three apartments each; and 34 shops. On the north side of Garscube-road, where the Oakbank Foundry used to stand, the same builder has just completed an extensive tenement, four stories in height, and divided into 72 houses of rooms and kitchens, with 13 shops underneath. This range is intended to be lengthened eastwards as soon as possession can be obtained of an old-fashioned school-house and the dilapidated round toll-house; in fact, Mr. Duncanson intends to open a new street at this point, which will run almost in a line with S. George's-road. . . . On the west side of S. George's-road, and south from the old-fashioned church of S. George's-in-the-Fields, there has lately been erected a large square block of buildings, consisting of 51 houses of two apartments, and 14 of three apartments each, with 10 shops, the latter being mostly situated in S. George's-road. A tenement has also been erected at the back of the church, but a part of the 'yard' abuts upon a new street running east and west, and forms a very ugly obstruction. In Inchbelly-road, Springburn, and on Garngad and Keppoch-hills, tenements are rising, or have lately been roofed in, the greater portion of which are designed for the occupation of the working classes. The same may be said of the Parliamentary-road, where we found lately no fewer than eight tenements, consisting of 156 houses, 34 of which were single apartments, 81 of two apartments each, and 41 of three apartments, besides upwards of 20 shops. In this quarter also Messrs. George Smith & Co., of the Sun Foundry, are busy erecting new works, which will cover about four acres of ground, the fronts extending 450ft. and 320ft. respectively. In the West End we found, in various stages of progress, or newly completed, 83 houses of one apartment, 621 of two apartments, 231 of three, 69 of four, 47 of five, and 15 of six apartments each, besides 98 shops, to say nothing of several public works. It will be seen, therefore, that the great majority of these houses have been erected specially for the working classes, and not a few of them in situations hitherto held sacred to middle-class gentility."

◆

One hundred and twenty-seven architects have applied for copies of instructions to competitors for the erection of the Wharfedale Union new workhouse.

It is stated that Mr. Samuel Smiles, author of "Lives of the Engineers," is about to undertake the biography of the late Mr. Brassey.

---

* There is much obscurity as to this receptacle of the imperial remains. There is preserved in Aix a traditional marble sarcophagus, carved with the representation in high relief of the Rape of Proserpine, and Professor Donaldson is inclined to believe it was temporarily used on this occasion. It is called the tomb of Charlemagne, and was removed by the French to the Church of the Benedictine monks in Marseilles, according to Dittmar's "History of the World."

The Surveyor.

THE RATING OF RAILWAYS.

(*Concluded from page* 472).

IN the case of a railway the property of one company, but jointly used by two or more companies, it has been laid down that all the traffic is to be taken into account, as though it belonged exclusively to one company, and that the proper deductions should be made therefrom. It was held in the case of *The Queen v. the London, Brighton, and South Coast Railway Company*, that in estimating the rateable value of the *Brighton line* in the parish of *Croydon*, the traffic of *The South Eastern Railway Company* passing over the line, as well as that of the *Brighton Company*, should be taken into account.

The judges said "The subject of the transaction between the appellants, *The Brighton Company* and *The South Eastern Company*, seems to be this: that the traffic of the latter is to pass over a certain portion of the line of the former, in consideration of the traffic of the former passing free over a certain portion of the line of the latter. A certain distance, between two and three miles, of the appellants' line, within the parish of *Croydon*, is affected by this arrangement. We think that the Sessions rightly decided this to be rent in kind, earned by this land. It seems to us exactly the same in substance as if so many tickets were daily issued, without money paid for them, to *The South Eastern Railway Company* in return for so many received from them. The tickets mutually transferred would, on either side, represent so much money earned. But then, we think these earnings must be subject to the same deductions as if they were received in money."

Stations.—Hitherto, stations have been referred to so far only as it has been necessary to make a deduction in respect of them in estimating the rateable value of a piece of a line of railway. The method of rating each station in the parish in which it happens to be situated has now to be explained.

It must still be borne in mind that the rateable value of all the parts of a railway, lines as well as stations, cannot exceed the rateable value of the whole, and that the rateable value of each separate station is the rent which the hypothetical tenant of a railway might be reasonably expected to pay for it.

As already explained, it was laid down in *The North Staffordshire case* that the rateable value of the stations must be calculated at the actual value at which they ought to be assessed, and not on the original cost of construction. It was well put by Lord Denman in his judgment in the case of *The Queen v. The Overseers of Mile End Old Town*, that the rule of law laid down by Act of Parliament for ascertaining the rateable value of any subject refers to an estimate of the rent it should yield: that the outlay of capital might furnish no such criterion since it may have been injudiciously expended, and what was costly may have become worthless by subsequent changes.

A station may be too large for the requirements of the traffic, in which case the amount of rent which a tenant could be expected to give for it for a year, or from year to year, would only be in proportion to the use which he could make of it. A station on the top of a high viaduct would be much more costly to erect than one on the level of the adjoining land; nevertheless, the station on the level would be worth a greater rent to the tenant, because it would be much less expensive for him to work, and much more convenient to his customers—the public. A station on two levels, say a passenger station above, and a goods station below, must be less valuable to a tenant than a station of equal area all on one level.

A station originally constructed for the accommodation of a given traffic, which may have been subsequently diverted by the opening of a new line, or by other causes, is not worth so much to a tenant as its original cost would imply. In such a case, so much of the station as exceeds the requirements of the traffic would be an incumbrance to the tenant instead of a benefit; just as a farm homestead, originally intended for the accommodation of 1,000 acres of land, would be of no more value to the tenant of only 500 acres than a homestead suitable for the lesser quantity of land would be; indeed, the larger homestead would entail upon him repairs, to the cost of which he ought not to be subject.

In the case of *The Queen v. Fletton*, in 1859, a judgment was given which, at first sight, appears to be a little conflicting with other judgments, so much so, that the present Chief Justice Bovill, who was counsel for the appellants, *The Great Eastern*, then *The Eastern Counties Railway Company*, subsequently asked leave to mention the case to the judges on the ground that the judgment had possibly proceeded from a misapprehension of the facts; but Chief Justice Cockburn said that there had been no such misapprehension. The facts of the case were, shortly, these:—*The Eastern Counties Railway Company* were, in 1843, the sole proprietors of the *Peterborough station* in the *parish of Fletton*. In that year they entered into an agreement with *The London and North Western Railway Company* whereby the latter Company were, for 999 years, to have the joint use of the station in consideration of a fixed payment. Subsequently, *The Great Northern Railway Company* diverted a considerable portion of the traffic from the *North Western* to their own line, and the station at Peterborough became diminished in value to a very large extent. The appellants contended that, in estimating the rateable value of the station, regard should be had to the use made of it by the two companies at the time of making the rate. The parish contended that the fixed payment made by *The North Western Company* ought not to be left out of the calculation. It must, however, be mentioned that the appellants admitted that, for the purposes of the case, they were to be deemed the persons rateable in respect of the whole occupation.

On this statement the judges decided that the hypothetical tenant, coming into the place of *The Eastern Counties Company*, would take into account the amount to be paid to him by *The North Western Company* for their use of the station, and, therefore, that that payment must also be taken into account in estimating the rateable value of the station; but the judges seemed to contemplate that an altered state of circumstances might very easily be brought about, under which the rateable value of the station might be different. They laid it down that the true principle was to assume the continuance of the circumstances constituting the value to the existing occupier unless it was made to appear that those circumstances were about to undergo a change.

The rateable subjects in a railway station are numerous, and will at once present themselves to the mind. Among them are:—

The booking offices, waiting rooms, refreshment rooms, platforms, sidings, turn-tables, goods warehouses, carriage sheds, engine houses, tanks, cranes, and other fixed plant necessary for the use and working of a railway. The rateable value of all these depends upon their extent, construction, convenience, the accommodation they afford, and the beneficial use which may be made of them, the rateable hereditament being the land on which they stand or to which they are affixed, enhanced in value by them.

Under the provisions of certain Acts of Parliament, among them "The Public Health Act, 1848," land used only as a railway is to be assessed to the district rates on one-fourth of its net annual value only. It has long been conceded by railway companies that this exemption did not apply to railway stations, but it was reserved for the case of *The South Wales Railway Company v. the Swansea Local Board of Health* to obtain a judicial decision as to what is to be considered as "land used only as a railway," and what as "station." The judges said, "The line itself, the sidings, and the turn-tables, on which the carriages actually go, and so much of the land at the side as is occupied for the necessary support of these are, in every sense, part of the railway, and so much of the platform as is of the same width as the side of the railway adjacent is like it to be considered as part of the railway, but the rest of the property is liable to the full rate."

There is a more recent case, that of *The Midland Railway Company v. The Council of the Borough of Birmingham*, in which the judges have fully confirmed the decision in *the Swansea case*, that "the railway, on a reasonable construction of it, seems to be not only the actual line of railway necessary for carrying goods and passengers from A to B, but all the turn-tables, and sidings, and so on, which are necessary for the purpose of conducting the traffic of the railway. If they are sidings which are not used for that purpose, and not necessary for that purpose, but which are in the nature of warehouses, then they become rateable at the full value."

This judgment unfortunately gives rise to much litigation at Sessions. The question arises under it: What are "sidings not used for that purpose, and not necessary for that purpose, but which are in the nature of warehouses?" It has been contended that a siding leading to that part of the goods station of a railway used as a coal depôt is such a siding, because trucks belonging to a coal owner sometimes stand on it, laden with coals consigned to a coal merchant in the adjacent town, who may often dispose of the coals to a customer before they are unloaded from the trucks, and the customer may even fetch them away in his own carts. Again, it has been alleged that a siding leading to the repairing shops of a railway company is a siding unnecessary for the purpose of conducting the traffic of a railway company, because the company could conduct such traffic without being the repairers of their own stock, which they could send off their premises to be repaired.

Judgment and discretion must be exercised in solving these and all questions connected with railway rating, and the circumstances of each case must be individually considered.

VALUATION OF AN ENTIRE RAILWAY.

GROSS RECEIPTS:—	
Being the entire earnings of the railway for one year from all sources of traffic	£500,000
WORKING EXPENSES,	
Including—	
Maintenance of way	250,000
Locomotive expenses	
Carriage and waggon expenses	
Traffic expenses and general charges	
Government duty	
Tithe rent-charge	
Rates and taxes	
Net receipts	£250,000
OCCUPIER'S SHARE,	
Including—	
Interest on capital	125,000
Trade profits	
Insurance against risks and casualties	
Depreciation of rolling stock	
Gross estimated rental ..	£125,000
STATUTABLE DEDUCTIONS:—	
Annual sinking fund, to provide for the renewal of way and works	20,000
Net rateable value of the railway and stations	£105,000

PARISH VALUATION.

GROSS RECEIPTS	
For a year, attributable to the parish, ascertained on "the parochial earnings principle," say	£5,000
WORKING EXPENSES,	
Including—	
Maintenance of way: calculated according to the length of line in the parish ..	2,500
Locomotive expenses: in proportion to the miles run by engines in the parish, and including share of light running, shunting, piloting, and assisting	
Carriage and waggon expenses: calculated on an estimate of the miles run by carriages and waggons in the parish	
Traffic expenses and general charges: charged in the proportion which the gross receipts in the parish bear to the gross receipts of the whole system	
Government duty: in proportion to the amount of traffic in the parish chargeable therewith	
Tithe rent-charge: the apportioned sum arising out of the land occupied by the railway in the parish ..	
Rates and taxes: according to the rate in the pound with which the assessment is chargeable, and upon an assessment equal to the result of the valuation ..	
Net receipts in the parish due to line and stations	£2,500
RATEABLE VALUE OF STATIONS,	
In proportion to the gross receipts, say	200
Net receipts due to the line of railway in the parish	£2,300
OCCUPIER'S SHARE,	
Including—	
Interest on capital employed	1,250
Trade profits	
Risks and casualties	
Depreciation of rolling stock	
Gross estimated rental of line in the parish	£1,050
STATUTABLE DEDUCTIONS:	
Renewal of way and works, and annual sinking fund	200
Rateable value of the line of railway in the parish	£850

◆

The claim by Messrs. R. & W. Cuthbertson against the Glasgow Improvement Trustees was settled on Thursday week, the jury giving the claimants £2,340 for their property, £180 for its compulsory purchase, and £300 for removal and interruption of business; in a , £2,785.

Building Intelligence.

CHURCHES AND CHAPELS.

Blackfriars. — Christ Church, Blackfriars-road, was re-opened on Wednesday week by the Bishop of Winchester, after having undergone extensive alterations and repairs. The alterations consist in the replacing of the old-fashioned high-backed pews with modern open stalls, and the removal of the pulpit to a more appropriate and convenient position. The flat ceiling has also been removed, and a waggon-headed roof substituted. The church has hitherto been without apse, but now a circular apse has been built, containing five stained glass windows, and flanked by two vestries, one for the clergy and the other for the choir. Four of the windows have been filled with stained glass. The total cost of the works has been upwards of £3,000. Mr. Blomfield was the architect, Messrs. Gibson Bros., of Southwark, being the contractors.

Howell.—The parish church of S. Oswald, at Howell, Lincolnshire, was reopened on the 15th inst. The church consists of nave, north aisle, and chantry chapel opening into the chancel (and now appropriated as an organ chamber), south porch and chancel. The inner door of the porch is Norman, and an arcade of four semi-circular arches is Early English. The chancel and bell gable, for there is no tower, are Decorated. Some of the windows in other parts are of the Perpendicular period. The eastern window of two lights has been filled with painted glass. Under the direction of Mr. Charles Kirk, of Sleaford, new roofs have been placed on the nave and chancel, and the whole of the church neatly re-seated.

Lincoln.—While the rebuilding of the church of S. Swithin's is almost at a stand-still, and S. Martin's involved in a mystery, the parishioners of S. Mark are making considerable efforts to procure a new church for their parish, the necessity for which arises from the increased population. A design for a church to accommodate 300 persons has been prepared by Mr. W. Watkins, of Lincoln, consisting of a nave (without aisles), and chancel having an apsidal east end. A recessed baptistery is placed at the west end, and a vestry at the south side of the chancel, and provision is made for an organ in the north-east bay of the nave. The windows of the chancel are placed at a considerable height from the floor line to admit of a future reredos. At the north-east corner of the nave is placed the bell turret, which is circular to the height of about 40ft., and octagonal from thence upwards, terminating in a spire, the total height of which from the ground is about 100ft. The entrance to the church is by a porch in the north-west bay of the nave. The church is designed in a plain, well proportioned, and substantial manner in the style of the first period of Early English architecture.

Liverpool.—On Tuesday the foundation stone of a chapel to be erected in Wellington-road, Toxteth-park, in connection with the United Methodist Free Churches, was laid. The new chapel will be in the Italian style, and built of patent red bricks with Stourton stone dressings, the dimensions being—length 61ft., and width 41ft. Accommodation will be provided for 650 persons. The total cost, including the purchase of the land, is £3,600. The designs for the building have been prepared by Mr. W. I. Mason, architect, of Liverpool, and Mr. T. Bridge, of Burscough, is the contractor.

Lye. —The new Church of S. Mark, Lye, has been consecrated. Mr. T. Smith, of Stourbridge, prepared the plans for a church, with 400 sittings. The cost of the building consecrated is about £3,000. The memorial stone was laid by Lady Lyttelton only about twelve months ago. The fabric is of brick, with stone facings. It has a nave with aisles, and an apsidal chancel with vestry on its north side. The clerestory is entirely of wood, and so bound together by iron rods as to rest on the pillars, so as to be unaffected by any settlement in the walls which might be occasioned by the mines in the vicinity. The central window of the apse is of stained glass.

Shrewsbury.—A new iron church, dedicated to All Saints, has been opened at Shrewsbury. The fabric has been erected by Mr. Dyer, of Euston-road, London, the contractors for the builder's work, including footings, quarry floors, fittings, &c., being Messrs. Bowdler & Darlington, of Shrewsbury. Mr. E. Haycock, jun., who acted for the committee as honorary architect, designed the internal fittings.

Shrewsbury.—On Friday week the new Presbyterian church of S. Nicholas was opened at Shrewsbury. The style is Norman. The plan consists of nave, with clerestory and galleried aisles. The whole of the internal and external dressings to doors, windows, &c., are of Bath stone. The walls are of coursed hammer-dressed Grinshill stone. The front elevation is made very effective by the erection of a circular staircase tower, which rises above the nave, roof-capped with stone. The architect is Mr. R. C. Bennett, Weymouth. The whole of the carving is the work of Mr. Geflowskii; the internal fittings were supplied by Mr. Birrell; and the plastering, &c., has been done by Mr. James, all of Shrewsbury.

South Kensington.—On Friday last the Bishop of London consecrated a new church, dedicated to S. Jude, which has been erected in a district which, until lately, was composed of uncultivated fields and small market-gardens lying between the Fulham-road on the north and Kensington on the south, but which has now become one of the well-inhabited districts of South Kensington The church is in the Early Decorated style of architecture, from the designs of Messrs. George and Henry Godwin. Very light galleries are introduced, and the nave and aisles so widened that the great bulk of the congregation is brought towards the east end of the church. It will seat about 1,600 people, and the whole cost, including adjacent rooms, which will hold between 300 and 400 people, is about £11,000.

BUILDINGS.

Glasgow.—The directors of the Glasgow Convalescent Home have secured a farm near Lenzie Junction on which to erect a Home worthy of the great city. The contracts have just been concluded, and the work will begin at an early date. Mr. Thomson, of West Regent-street, Glasgow, (the architect of the extensive pile of buildings forming the poor-house, infirmary, and asylum for Govan parish at Merryflats) has prepared the plans, and will see them carried out. The cost will be £6,000

Glasgow.—The brethren of the S. John's Masonic Lodge, Glasgow, have just completed a new hall, which with its accessories occupies one flat and the attics of the building immediately to the north of the S. Mark's Lodge, in Buchanan-street. The hall is a spacious apartment, 36ft. by 22ft., with a height of ceiling of 25ft. Entered from it is the "adjacent," of suitable proportions, the kitchen, &c., while on the attic floor are two rooms for conversational purposes. The hall is cardinally correct in position—*i.e.*, it stands due east and west. The daïs at the east end of the hall stands on a platform ascended by three steps, and is provided with seats for the Right Worshipful Master and the Depute and Substitute Masters. The seats are divided from each other by a die, carrying a sphinx modelled by Mr. John Mossman, and cut in wood by Messrs, Kay & Reid. The chairs for the Senior and Grand Wardens are situated respectively at the east end and south side of the hall, and are raised two steps. The brethren who do not hold office will be accommodated on two rows of seats running round the hall, the upper row being raised 3in. or 4in. above the level of the floor, which is of mosaic. The hall will accommodate upwards of 100 persons. The decorations were carried out under the superintendence of Bro. Mackay, of 168, Gallowgate.

◆

Institution of Surveyors.—At the ordinary general meeting, held on Monday, December 12th, the following names were read and passed for ballot, viz. :—As Honorary Members — Lieut.-Gen. Sir William Thomas Denison, K.C.B., East Sheen, Surrey; The Hon. Charles Alexander Gore, Office of Woods, Forests, &c., Whitehall-place; The Hon. James Kenneth Howard, Office of Woods, Forests, &c., Whitehall-place. As Member—Alexander Milne Dunlop, 1, Westminster-chambers, Victoria-street. The following candidates were balloted for and declared duly elected: As Members,—George Arnold, Colton, North Devon; Robert Blackadder, Dundee; Thomas Buchan, Dundee; Arthur Cates, 7, Whitehall-yard; Jonas Paxton, Bicester. As Associate,—Frederick W. Cardell, 9, Whitehall-place. It was resolved that in consequence of the 1st January falling on Sunday that "the meeting proposed for Monday, January 2nd, shall not take place."

NOTICE.

ALBERT DÜRER'S ENGRAVINGS.

THE great interest taken in the life and works of the most powerful of the great masters of the fifteenth and beginning of the sixteenth centuries, has induced us to reproduce a series of some of his most interesting works. We feel sure that our readers will be glad to see accurate reproductions of these admirable engravings, the originals of which are now rare and costly.

The series will commence in the second number of our new volume—January 13, 1371—with the beautiful "Virgin and Butterfly."

◆

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

To Our Readers.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

Letters relating to advertisements and the ordinary business of the Paper should be addressed to the EDITOR. 31, TAVISTOCK STREET, COVENT GARDEN, W.C.

Advertisements for the current week must reach the office not later than 5 p.m on Thursday.

Received.—J. C. A., St. Mungo, T. P. Lilly, M. D., E. L., E. A., J. P., M., T. W. S., J. N., E. H,, W. J. W., W. H. L., J. O., W. O. C., J. O., C. D., R. G. & Co., T. & Son., The Alton Union, J. Greenwood & Sons.

C. S. & H. C.—Plans of cottages received; nothing particular about them to call for their insertion.

Remo.—By referring to our report (on p. 460 of our last number) of the last meeting of the Institute, you will see that Mr. Ouvry, the honorary solicitor to that body, has given it as his "clear opinion" that "the plans, specifications, and drawings, whether the buildings be erected or not, are the property of the client if he has paid for them, and that the decision in the case of Ebdy v. McGowan practically settles the question."

◆

Correspondence.

ARCHITECTURAL DRAUGHTSMEN IN AMERICA.

(*To the Editor of the* Building News.)

Sir,—Having seen a notice in your last issue of advice to architectural draughtsmen, setting forth the advisability of their coming here in search of employment, I am urged by a feeling of compassion towards such to contradict in the most emphatic manner any such delusion. I have had at least thirty applicants call at my office in the last month seeking employment, several of whom are from England, and to-day had a call from one just arrived. He agreed with me that such notices cannot but be productive of great disappointment and distress, as there are not only no grounds for them, but that, on the contrary, the country is literally flooded with draughtsmen from Germany, who work for the very lowest wages, and the great bulk of the architects, being Germans, give the preference, of course, to their own countrymen. This, added to the fact of this city being, probably, the most expensive to live in on the continent, it is simply a piece of cruelty to advise young men to leave England, where they have friends and relatives, and understand the ways of the country.—I am, &c., C. P. Thomas.

Chicago, Dec. 10, 1870.

PERCENTAGERS AND ARCHITECTS.

Sir,—The points raised in my letter of Dec. 9 —whether three or how many they might be— were introduced only to lead to and illustrate that increasingly-urgent one for which alone I should allude to the persons called "architects" —namely, the present ruthless stamping out of all national monuments and history to yield them "percentage on outlay;" and I am astonished that one of themselves should expect me to discuss with him; with one who says (p. 456) that he would welcome "any system that could be devised for paying them properly." (Why on earth, then, has he devised *none* but for being paid *im*properly?) I am astonished because I thought it would be clear enough (p. 439, middle of col. 1) that I belonged to that portion of the public—Vitruvius's public, or whatever he chooses to call us—who regard such claimants, diplomaed or not, thus proclaiming themselves incapable of devising the first thing they ever had to devise, how to reckon their own pay, as the merest quacks, with whom we should as soon think of discussing as of consulting or employing them, and as soon think of this as of trying the advice of astrologers. Any of the questions in p. 456 I will answer when put by an ordinary member of society, but shall not stoop to wrangle with a taker of “percentage on outlay.” An “architect” would “welcome any system that could be *devised* for paying” architects “properly.” Good heavens! How can he be an architect if no *deviser?* Was not the old English term for which Renaissance pedants substituted this Greek one, was not the name of our cathedral-devisers *engineer?* And is not “engineer” from *ingenium*, “*a device*”? What on earth is an engineer or architect for, if not a man of devices? But your correspondent and these men proclaim they cannot devise the *first* of all things that any of them ever had to devise—a way of being paid for his own work! A percentage, say Mr. Tite and his Institute, a percentage on the cost of *all other men’s work* “seems the best method that can be devised.” O, people of England, we, Tite & Co., Royal Institute of British Architects, being to devise all works for you, and be paid for our devising, have devised our *best* as to this first thing that had to be devised, the mode of being paid for all our other devising. Lo, we have devised! And this is our device:—*The best*, we deem, “that *can* be,” that you pay us for all other devising so much per cent. of the outlay it takes to execute the same. All other men’s work to be paid for by measurement, and then, so much per cent. of what is paid for *their* work is to be the pay for our devising of the same, our ordering, regulating, economising of the same!

A reasonable being is expected to argue with men like that! Why it surely is rather a disgrace to incur from one of them the saying that one evinces “the mature views of a man deeply versed in” these matters! But as that is what your correspondent is pleased to say, I beg to inform him and whomever it may concern, that they are the views of far more than one. We, of the scattered English race, do not care, comparatively, what *new* buildings may arise, in a putrefying community that breeds this manner of parasites, and others for ought we know, as pestilent, though we cannot conceive how. By all means build, O lords of Britain, as many laughing-stocks for Europe as ye will. Money not muddled into Westminster Palaces, Thames Embankments, and the like, would almost surely run through your hands to some folly as mischievous. But what arouses us is the “restoring” off the face of the earth every lovely and inimitable relic of the handiwork of our fathers in the ages that our race blossomed in this its cradle isle; the stamping out by gowned busybodies and shovel-hatted triflers, by men that offer “percentage on outlay,” and these their outlay-bribed creatures, of everything that was noble or precious, or monumental, or even that was true history, everything that visibly linked us to our long ancestry more than Maories, everything that could distinguish a land of a thousand years’ story from Australia or Texas; the vanishing of all to feed a single generation of your percentagers. *That* is what has roused us at length to see that this disgusting system of ædile bribery concerns those who build not, concerns our whole exiled race, and *must* be checked and crushed without an instant of unnecessary delay. Day by day percentagers are let loose on what few fragments remain to be stamped out. We may be too late now to save any. We may not get this infamy agitated into notice till all is gone, as Ruskin predicted sixteen years ago; but our agitation will not cease till these truths are acted upon:—

1. That the man who offers or gives to another a percentage on *any* outlay, is a public enemy; and unless the said outlay were of wealth exclusively and absolutely his own, of the mere sweat of his brow, the offence is one that must be stopped, if not by common law, by statute; and that enforced, if necessary, by fine, imprisonment, and flogging.

2. That the man who accepts from any other, or whatsoever services or supposed services, a percentage on any outlay, is also a public enemy, and to be stopped, if in no other way, by fine, and imprisonment, and flogging.

The editor of the *Builder*, commenting on one of the late “architects’” suits, talks of some claim that was disallowed being as indisputable as their “right to five per cent.” (on outlay). Now in the first volume of the same *Builder*, dated 1841, we learn that “Lord Kenyon long ago ruled that a percentage *could not be recovered*.” If Lord Kenyon’s predecent has been so indisputably overruled as the *Builder* considers, does its editor or the Institute imagine it is never to be heard of again? I beg to inform any one interested, there is now an agitation begun which will not cease,—however recordless and monumentless they may meanwhile make our race and land,—till some law is passed whereby any offerer of a percentage on others’ outlay, be he dean or canon, mayor or town-clerk, bishop or rector, warden or trustee of whatsoever, may be fined a full half of the said outlay, of all in which percentage, great or small, was reckoned; and any taker of a percentage or any outlay, be he called engineer, architect, surveyor, or aught else, may forfeit the other half thereof; or either of them in default of payment be imprisoned; and if imprisonment be incurred a second time, a public flogging added, or at a third time two floggings, and so on. We shall agitate till not only there may be such a law, but that no alleged custom of any trade or institute, royally incorporated or not, may be pleaded against its operation. If ever enforced, it will assuredly be in presence of testimony enough of what percentagers brought on the Victorian age! “*Monumentum si quæris circumspice*” will be this accursed thing’s epitaph for many a long day!

Your correspondent talks of the “loss and degradation it involves” him in, and I have just the same language in a letter received from Mr. Geo. Edmund Street some years ago. Of course I immediately asked, as I now must again, Degradation! by whom? Who then degraded you, sir? Who required or asked you to take percentage on an outlay? No answer have I got from my friend to this day. Now I publicly challenge these two men who write, one publicly and the other to me, that they have been “degraded,” to name their degraders.

I demand the name of the person who required, or asked, or suggested to Mr. Street to work for percentage on an outlay; and the name of the person who inflicted the same “degradation” on Mr. Aitchison. Further, about ventilation, the latter accuses house-builders of refusing to build the extra flue to each stack—he writes, or you print “each *room*,” which would be an absurdity,—the extra flue necessary for foul air exit. Now I demand the name of the house-builder to whom Mr. Aitchison ever proposed in vain to build rooms (or a single room) innoxious or self-ventilating. I demand documentary proof that such proposal was made (as it always was and will be by me) and set aside for a non-ventilating structure on ground of expense; or else that Mr. Aitchison withdraw this accusation. I will not acquiesce in aspersions on respectable classes of my countrymen, thus bandied about by quacks having, by their own account, no “proper” mode of living.

Again, about so-called “restorations,” the damning fact, and *casus belli* of my scattered race against this brood of old Britain’s parasites, he says that, if not done by such as they, “restorers will be found,” and if not architects, “usually worse than architects.” I demand proof of this, and offer proof of the direct contrary, that this finding is not so very easy. The only others than so-called “architects” likely to be sought are masons, builders, or sculptors, and not metropolitan, but *local* ones, near enough to have known and loved, and in some degree appreciated whatever venerable and noble thing it is whose “restoration” is in question. Now, whatever such might be got to do elsewhere, to old works not so familiar to them, let me tell Mr. Aitchison, this sort of men cannot often be bribed to lift up tool on their own town’s jewels, and “break down the carved work thereof with axes and hammers.” It takes strangers from a distance, commonly Londoners, and certainly some very much baser order than handicraftsmen or average country tradesmen, to effect these eternally infamous robberies of mankind. He or others of your readers may or should have heard of one of the worst of these, our race’s utter loss a few years back, of one of the most precious and then least-injured relics of lovely handiwork of our ancestors’ noblest time, the Salisbury chapter-house, now replaced by a heap of manufacturers’ finery supposed to model it. In the guide-book before me (Brown, 1866), we find, “It was matter of notoriety that the late Bishop Denison had also conceived the design of repairing the chapter-house. Accordingly, at his lamented death, the restoration was resolved on as an appropriate memorial of the departed prelate.” And there follows a translation of a long inscription to that effect. Now it would be more historical and useful were it known *why* this was not begun by the good bishop himself, but only (as the inscription has it) “by the offerings of the faithful” after his death. I happen to remember the pious and well-meaning man’s installation, and what was the first story current of his piety on his arrival. The new bishop had discarded one tradesman for another, who sold the same goods at higher price, because he could not think of dealing at “a shop that would undersell another.”

Now you need not wonder that this was a man to be monumented “by the faithful” of a country town. Well, the idea of chapter-house “restoration” soon being conceived by this model bishop of shopkeepers, it was his principle to apply to the nearest mason and sculptor, born, probably, under its shadow—by name, William Osmond For years the liberal prelate urged on him the job and the profit, but in vain. He stuck to the kind of answer Chantrey gave when asked to “restore” the Elgin marbles (for it should be known that the works of Phidias were to be thoroughly “restored” when first brought to Bloomsbury). Whether he converted the good bishop to Ruskinism (or Osmondism, for he probably never read Ruskin), or the bishop merely scrupled to leave a neighbour and hire a stranger, it is certain this honest mason preserved Anglo-Saxondom that monument all the years of Bishop Denison’s life. As soon as he had to be monumented, of course, his former desire being “matter of notoriety,” a restorer was to be found in London, of the R.I.B.A., and the glorious fabric soon vanished before the grieved eyes of him who had so long rejected the bribe, and who, I humbly opine, ought as well to be remembered in these days as perhaps any Sarum worthy since his canonised namesake, S. Osmund. At least, you see, some agent more unsaintly and worse than a Sarum mason, though not “worse than architects,” had to be found for this job; and the case will show Mr. Aitchison or his readers, that the finding of “restorers, good or bad,” even as bad as architects (to say nothing of “worse”) is not always so easy as he may think.

Now, Sir, I want to make an appeal I have before made at this time of year. Some correspondents were lately complaining of want of employment for their “profession”—percentagers. It is, I hope, by this time, full. I hope there are more than there will ever again be employment for. But as for architects, the lack is of *them*, not of employment for them, heaven knows! They are wanted, and there is not enough of them, by some thousands. But suppose we say, to be safely within bounds, work is waiting for 1,000. I cannot believe the atmosphere of a percentager’s office is so poisonous as in five years to blind every youth that enters it to this plain fact. The public—all the public I ever see—wants architects, not quacks; and though it may want much else that this generation can hardly get as qualifications of them, there is one paramount negative qualification that none I know of will dream of dispensing with. Their architect must never have taken, nor ever mean to take, any percentage on any “outlay.” All men that I know hold that the single act of once taking this manner of pay shows a mental stuff that never can, by any education whatever, yield what we want. Now every New Year’s Day the *Times* has an alphabetical list of what are called, I think, the “Sworn Brokers.” I have no idea what a sworn broker is, nor wherein he differs from an unsworn; but you see it is plain *their* public sufficiently understands what it is they swear, to make it worth the sworn ones’ trouble and shillings to advertize all their names and addresses once a year. *My* public wants, quite as much or more, the names and addresses of as many as undertake the duties of architects, with this paramount declaration, or oath and obligation, without which *this* public will employ no man—that he never has taken percentage on an outlay and never will. If any number of your readers under 1,000, declaring this, will forward their names and addresses to you, to be alphabetically arranged and advertised in the *Times* at the opening of the year (which I will undertake), we should understand each other, and have a first foothold for discussion as to the founding of this sorely wanted profession. They may start with as many modes of remuneration as they please. We shall soon find how to weed them down to the best. I never set forth mine, which has often been published (in the Building News and elsewhere), as "the best that could be devised," but the best *I* could devise; and shall immediately adopt any that may be proved more philosophical, true, or fair. The first thing to know and make known is who of us holds with the common-sense public on this question of the first thing to be devised, our pay; who repudiates this absurd and monstrous fiction, and refuses to treat any outlay-paid class as aught but pestilent quacks. This, as I have said years ago, is now the sole possible bond of union, and for a first one, sufficient.—I am, Sir, &c,

E. L. Garbett.

P.S.—Since the above was written, "J. G.," in p. 475, thanks me for repeating the theory of ventilation, which of course had been done more fully by Tredgold before I was born, and by Tomlinson and other popularizers of science frequently since, but wishes me "kindly to proceed to" apply such theory to a particular house, "in your columns." Certainly I will do so, whenever and wherever it may seem to the public benefit, as I have years ago, no one heeding. But I will not begin gratuitously to instruct in the rudiments of an art or calling men professing to practice that art, and getting my countrymen's money on that pretence before they have begun to learn it. *Theory* alone, which is general, and not practice, is the sole proper business of journalists, teachers, or writers of any kind. The particular applications thereof in *practice* are the work of no writer or teacher, but of an artist—in this case, of an architect. If "J. G." wants a design such as he mentions, let him state to me the accommodation wanted, the locality and plan of his ground, and my charge for this work will be 10s. per square of floors. I will do the same for Mr. Aitchison or any other of your correspondents, provided he first withdraws from his name in the *Directory* and everywhere else, the description "*architect.*" I profess to be an Englishman, therefore not a getter of, or an assister to get, Englishmen's money on false pretences.

The last paragraph of "J. G," p. 475,—the notion of creatures that pay others "percentage on the outlay" getting anything by "insisting on having," is too supremely ridiculous. Of course what holds good of a lantern "holds good of a house," but not of either (or anything else), designed by percentagers on outlay. Of this I have had opportune proof since writing last, by the novel flickering and imbecile monstrosity of some railway and street lamps informing me that at length a per centager's finger has got at *them!* Of course a rightly-economized building is self-ventilative like a non-percentager's lantern, but instead of its being my duty to "convince the public so," I maintain it is the first duty of Mr. Tite and his Royal Institute, and Mr. Street, and every other percentage-planner, to convince the public it is *not* so; and convince us of much besides—to wit, the social purpose or utility of persons not having, and according to Mr. Aitchison, unable to devise, a way of being "properly paid" for anything they may do.—E. L. G.

CIRCULARISING ARCHITECTS.

Sir,—The utility of advertisement is now so generally admitted that it would seem to be false delicacy in an artist or professional man to neglect a mode of advancing his interests which has been found to succeed so well in trade. The youthful modesty of many beginners in architecture may be strong enough to prevent them from resorting to the system of puffing themselves into notice, and so far as I am aware, instruction in this art has not hitherto formed part of the course of study prescribed to an articled pupil. This omission I would fain hope will, for the future, be remedied in most architects' offices. As an encouragement to the tyro, as an example of a really neat and effectual style of puffing, the adoption and imitation of which cannot be too strongly recommended, I beg to enclose you a copy of a circular which has lately been left at the house of a clergyman in Pembrokeshire, whose old-fashioned prejudices, I am sorry to say, are too strong to allow him to receive it with anything but suspicion and disfavour,—I am, &c.,

Dec. 15. Windbag.

[Copy.]

H . . . f . . d, Dec. 9, 1870.

Dear Sir,—Finding that the demand for the services of a duly qualified and experienced architect is increasing in your locality, I have arranged to extend to . . . the fortnightly journeys I have been in the habit for some years of taking into Wales.

An experience of some fifteen years in restoring Churches and erecting Houses and Schools in various parts of England and Wales, will enable me to furnish plenty of references, including some from your own clergy.

Any information, too, respecting the dates of my proposed visits I shall be happy to furnish on application.

As I can only write a limited number of these notes perhaps you will kindly inform your neighbours with (*sic*) the chance now probably afforded them for the first time of securing services equivalent to those of a *resident* Architect, ensuring efficient superintendence over Builders, without occasioning the usual heavy extra bill for "Travelling Expenses."—I am, yours faithfully,

E. H. L. B . . . . r.

I have Plans of all kinds ready prepared.

To the Rev. ———

Intercommunication.

QUESTIONS.

[2078] FENCES.—Is an occupier of land bound to fence so as to restrain his cattle from trespassing on his neighbour's lands, even if the dividing fence belongs to his neighbour? Thus: A. has land adjoining B.'s. The hedge belongs to B., and is broken; A. wishes to turn cattle out. Must he put up a fence or hold watch to keep them from straying on to B.'s land? A certain county court judge holds A. must do so, and that B. can recover from A. for trespass. Is this good law?—J. E. P.

[2079] COPYING ORNAMENTAL SCROLLWORK ON TOMBSTONES.—Having to supply a polished granite monument to a given design in a country churchyard, at a distance, I would feel greatly obliged could any reader of the Building News supply me with directions as to the best and most expeditious way of transferring the ornamental design on the top to paper. The stone is first polished, and the design drawn on the surface, after which it is relieved about 1-16in. by cutting away the parts between the members of the design, the same as in a wood engraver's block. To sketch off an accurate copy would take too long time, and a photograph would be of no use.—I. M. A.

[2080] TENANT'S FIXTURES.—Can an out-going tenant (whose lease of, say, 14 years has expired) claim and have removed such constructions as a water-closet apparatus, a partition dividing one large room into two, a marble chimneypiece in lieu of a wooden one, all of which things he had done at his expense to improve the property during his occupation? Can he claim, in the event of the above being allowed to remain, a monetary compensation from his landlord for improving his (the landlord's) property? I believe the chimneypiece can be removed, provided the original one be erected in its place, but I am not certain whether the out-going tenant is at liberty to remove the water-closet, &c., presuming, of course, that he makes good after removal.—Th. B.

Our Office Table.

New Method of Lighting.—On Wednesday week a paper was read by Mr. Silber, before the Society of Arts, on a method of lighting towns, factories, and private houses by vegetable or mineral oils. The system proposed is to distribute the oil over the house in pipes, like water, from a general reservoir containing a few gallons at the top of the building. The flow is regulated by little cisterns provided with a novel and well-constructed tap, regulated by a ball-cock or self-acting float, the lights being as nearly as possible on a level with the distributing cisterns. When the lamp is lighted the oil is by the ball-cock movement supplied automatically as fast to the wick as it is consumed, and a very perfect combustion is effected. Numerous lights, of excellent quality and steadiness, were kept burning in the lecture-room during the evening; and on the long and earnest discussion which followed there was a general concurrence in admitting the great advance which had been made in this mode of burning light petroleum oils. There was none of the unpleasant odour so common to all the previous mineral oil lamps.

Small-Pox in a Restaurant.—The present severe visitation of small-pox in London is the occasion of considerable uneasiness to medical men and sanitarians, more especially on account of the culpable carelessness of many of the public. The *Lancet* states that a servant maid has been attacked at a considerable restaurant in the Holborn district. The underground kitchen of the establishment is the room in which she sleeps, and has been treated for four days. During the whole of this time the "chef" of the restaurant has continued his cooking operations with such interruptions as the presence of a sick female imperatively required. Our contemporary does not envy the patrons of this establishment, who, if the truth were known to them, would be horrified at finding that they have been both eating and breathing small-pox poison. The name of this restaurant ought to have been given.

The Projected Tunnel under the Mersey at Liverpool.—The proposed scheme of forming a communication between Liverpool and Birkenhead by means of a tunnel under the Mersey has, we hear, been most favourably received by the leading merchants, shipowners, and others engaged in the trade of Liverpool. It has also found considerable favour with the leading railway companies, who by this tunnel will obtain a ready means of communication between the two sides of the river.

Open Spaces on the Albert Embankment.—At the last meeting of the Lambeth Vestry a discussion arose respecting the proposal of the Metropolitan Board of Works to let on building leases the plots of ground on the Southern Thames (or Albert) Embankment, between Lambeth and Vauxhall Bridges, instead of appropriating them for purposes of recreation. It was proposed and seconded "That the Metropolitan Board of Works, having resolved to let on building leases two plots of land on the Albert Embankment, situated at the end of Broad-street, the Vestry consider such an appropriation of the land to be injudicious, and solicit the Board of Works to reconsider their determination, in order that the land in question may be given to the parish of Lambeth for the purpose of converting it into a place of healthful recreation for the children and youth of that densely-populated locality, which at present is much in want of such a place for benefiting and improving the condition of the very poor of the parish." Mr. F. H. Fowler, architect, and one of the Vestry's representatives at the Metropolitan Board, opposed the motion, on the ground that the Board had done its best to preserve in every district such places as were eligible for the purposes of recreation, and on this very Southern Thames Embankment, it had, upon his own motion, given the parish for the purpose of recreation all the open space from S. Thomas's Hospital to Lambeth Church, and had agreed to lay out £3,000 in the planting and embellishment of it. On the vote being taken, the motion was negatived by a considerable majority.

Lime and Mortar.—The main results of certain recent experiments made to obtain accurate information on the process of the hardening of lime and mortar, as applied for ordinary building purposes, are that the freshly applied mortar gives off, at first, water only, by which process the particles of lime begin to adhere together; afterwards carbonic acid begins to be absorbed, and thereby the solidity of the mass is increased. The last stage of the drying of the mortar coincides with that of saturation of the lime with carbonic acid, and this process causes the fixation of the porous bricks with the mortar. The absorption of carbonic acid alone, without previous dehydration, never causes ordinary mortar to become hard. Freshly made mortar exposed to an atmosphere of moist carbonic acid remains soft; while mortar placed under a bell-jar filled with carbonic acid, and standing over a basin filled with strong sulphuric acid, becomes rapidly hard. Large quantities of mortar, especially with a limited exposure to air, take months, or even years, to harden.

Open Spaces in Hackney.—Great efforts are being made in Hackney to secure to the public the free use of the open spaces of the district. We understand that the Inclosure Commissioners have recently been moved to issue the draft of a scheme, by which it is proposed, under the Metropolitan Commons Act of 1866, to transfer and vest in the Metropolitan Board of Works the open parts of London Fields, Hackney Downs, Wells-street Common (otherwise Hackney Common), North Mill Field, South Mill Field, the Triangle, Stoke Newington Common, and Clapton Common, and parcels of waste lands at or near Stamford Hill, Dalston-lane, and Grove-street, and that they henceforth be "regulated and managed" by the Board under the name of the "Hackney Commons." Under this arrangement the Board is to be empowered and authorized to execute such drainage works and other improvements as may be required for the purposes of the Metropolitan Commons Act; to plant and preserve the trees, shrubs, turf, and grass; to fence off such portions as may be desirable, and to preserve the commons in general free from all encroachments.

UNIVERSITY OF ILLINOIS-URBANA
3 0112 109186970